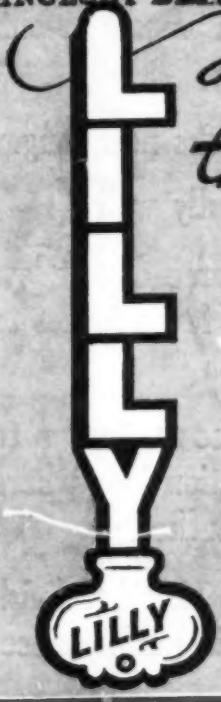
Industrial FINISHING

ECHNOLOGY DEPT.



The KEY to the "right" finish

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DETROIT

We have been making finishes for 80 years (since 1865) . . . and more important, we have been making specific finishes for specific products and purposes for 24 years (since 1921). Fourteen years ago we adopted the slogan "With the right finish —you'll finish right". With the war over and reconversion picking up momentum—this will be an important slogan during 1946. The name LILLY is truly the KEY to the right finish for your product.

LILLY VARNISH COMPANY

Indianapolis, Indiana

Branches : Chicago, Ill.; Grand Rapids, Mich.; Gardner, Mass.

THE LILLY COMPANY, High Point, North Carolina

VR V.22 Nov. 1945-Oct. 1946

DO YOU KNOW THAT ROXAPRENE IS BACK?

ROXAPRENE . . . the pioneer chlorinated rubber synthetic enamel

—*THAT* gives any product a smooth-as-silk quality finish

—*THAT* stands abuse . . . looks new longer

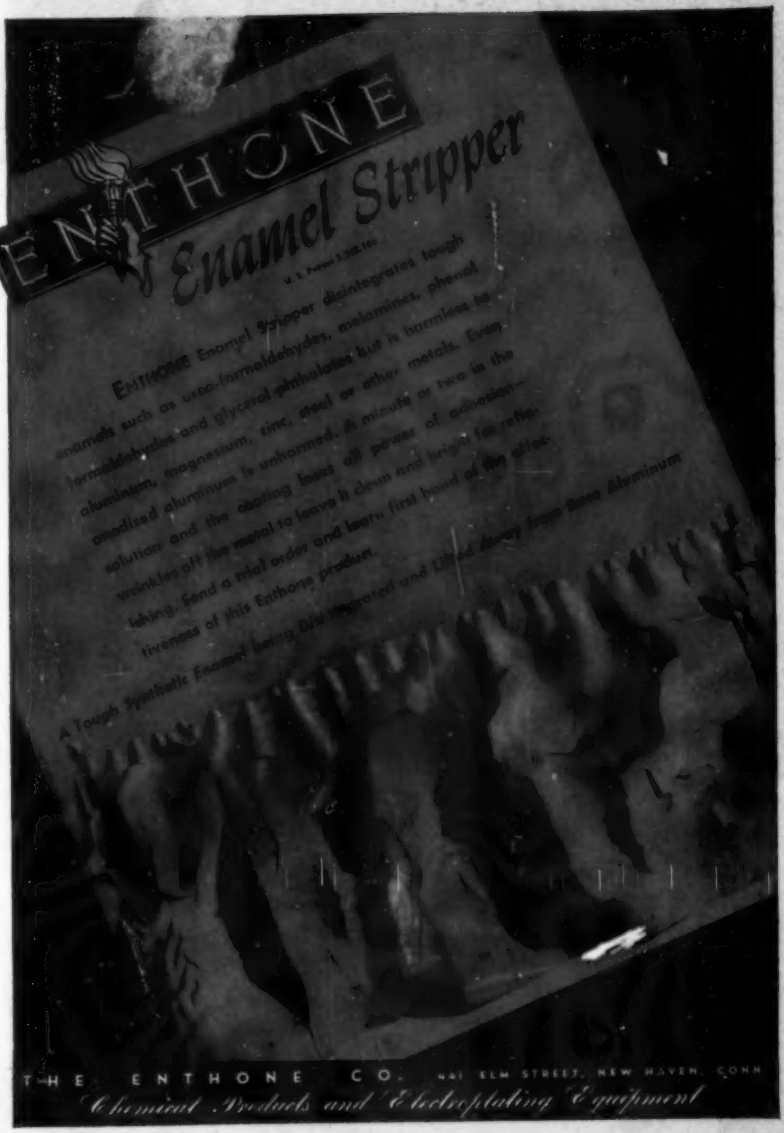
—*AND* will spray or dip equally well

—*AND* air dry fast . . . or force dry at low temperatures . . . or bake in a few minutes to step up your production rate

—*AND* is *ready right now* to go to work on *your* tough production jobs where conventional enamels won't suffice.

YES SIR! That's ROXAPRENE . . . another finish engineered by Roxalin for specific performance.

ROXALIN *Flexible* FINISHES
INCORPORATED
ELIZABETH NEW JERSEY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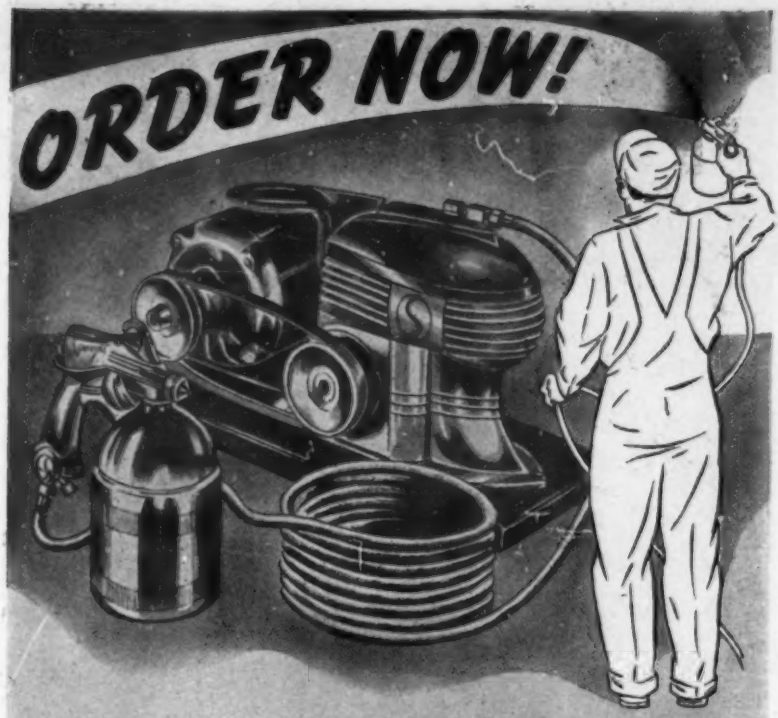
Enamel Stripper
ENTHONE Enamel Stripper disintegrates tough
enamels such as urea-formaldehydes, melamines, phenol
formaldehydes and glycerol-phthalates but is harmless to
aluminum, magnesium, zinc, steel or other metals. Even
anodized aluminum is unharmed. 5 minutes or less in the
solution and the coating loses all power of adhesion—
wrinkles off the metal to leave it clean and bright for refin-
ishing. Send a trial order and learn first hand of the effec-
tiveness of this Enthone product.
A Tough Synthetic Enamel being Electrocoated and Lifted Away from Bare Aluminum
THE ENTHONE CO. 442 ELM STREET, NEW HAVEN, CONN.
Chemical Products and Electroplating Equipment



DEALERS desirous of handling Electric Sprayit Company products are asked to keep in touch with their jobber regarding expected initial delivery dates. JOBBERS who have not already placed their quantity commitments for SPRAYIT Paint Spraying Equipment are urged to do so immediately. Orders will be filled just as fast as production conditions permit, and in the order in which they are received.

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PAINT SPRAYING EQUIPMENT, AIR COMPRESSORS, SPRAY GUNS, PUMPS, AIR TOOLS, INSECTICIDE SPRAYERS, SANDERS AND ALLIED FINISHING EQUIPMENT.

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ELECTRIC MOTORS, GENERATORS, VALVES, PUMPS, HYDRAULIC CYLINDERS AND CONTROLS FOR AIRCRAFT, AUTOMOTIVE AND OTHER INDUSTRIAL APPLICATIONS

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TWENTY-SECOND YEAR OF PUBLICATION

Industrial FINISHING

W. H. ROHR, Editor

Vol. XXII, No. 1 NOVEMBER, 1945 $2.00 a Year

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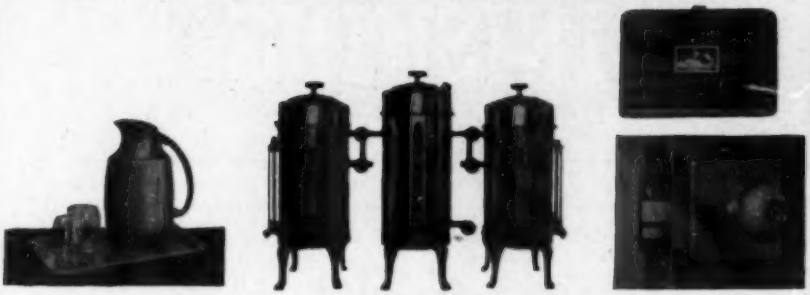

Remember, Too, How LEA *to Produce* The Desired Finishe

ARMY E NAVY

THE LEA MANUFACTURING CO.

WATERBURY 86, CONN.

Burring, Buffing and Polishing . . . Manufacturers and Specialist

When.....?

Methods and Materials Helped Quickly and Economically....

Yes, LEA served you well when you were making compacts, builders' hardware, flatware, jewelry, toys, clocks, lamps, irons or cookers. Now that you are switching from war-contract work to articles for peace-time commerce, we can serve you even better because of the new developments our finishing specialists conceived during the war. We encountered many new finishing problems, particularly in the field of burring. We were called upon to devise finishing methods for new metals and non-metals. Although an organization with the greatest pre-war finishing experience, new techniques developed through our war work have added greatly to this experience.

Why not let us help you set up effective and economical finishing methods for those new articles you are planning to put on the market as soon as possible? Finishing will be an important factor . . . too important for you to overlook the values inherent in LEA Finishing Methods and LEA Compositions.

in the Development of Production Methods and Compositions

Superfuels Not Needed—Despite all of the forecasts about a flood of 100-octane gasoline that will soon be engulfing us, at least one outstanding expert is actively debunking this talk. He is Dr. Gustav Egloff, president of the American Institute of Chemists, and petroleum technician for the Universal Oil Products Co. Until an engine is designed specifically for such potent fuel, he holds, there is nothing to be gained.

Dr. Egloff even feels that most aviation gasoline will drop to 87 to 91 octanes, because tremendous power is not vital in peacetime flying. "Those who purchase high octane gasoline for their automobiles when they can best use the lower ratings," he adds, "are gaining nothing — they are simply throwing money away."

* * *

It Won't Mildew—A new modified cotton fabric that does not rot, even under extreme exposure, has been developed under the direction of the U. S. Department of Agriculture. Although it has the appearance and strength of ordinary cotton, this material is manufactured by the cellulose acetate process, and thus is actually somewhat related to rayon.

In a dramatic experiment, this revolutionary cotton cloth was buried in soil of the type which would cause ordinary cotton to disintegrate within a few days. The treated fabric showed only a trifling loss of strength after remaining underground for almost a year. An important consideration is the fact that the new technique causes no odor, discoloration or stickiness. Above all, there is no toxic effect, thus making it possible to use the cloth for making food sacks.

* * *

Unbreakable Disc — The new high-fidelity, non-breakable phonograph records recently introduced by RCA Victor have been described as the greatest improvement in that industry since discs first began to replace the early cylinders. The new records are made of a vinyl resin plastic—quite similiar to the basic ingredient in some of our finest new paint materials.

This RCA product can be hurled to the floor, hammered against the table, bent, twisted and sat upon, without causing any perceptible damage. In all probability, however, it does not yet mean the end of the old-type shellac discs, for the selling price of the improved records is exactly twice the former figure.

* * *

Research Means Prosperity—According to the National Association of Manufacturers, one of America's fastest growing industries is the field of scientific research. It is a bit startling to recall that our country's entire expenditure in this field was less than three million dollars in 1920. That figure had increased eight-fold by 1940.

Our new television industry alone has invested over 20 million dollars in scientific studies, and this one field may soon provide hundreds of thousands of new jobs. Today, the NAM tells us, American industry leads the entire world

(Continued on page 9)

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Seals Wood Surfaces

This startling new development is a UNIVERSAL sealer for use under Lacquers, Synthetics or Varnishes. It gives greatly improved mar-resistance, provides better adhesion, improves "build"—and we guarantee that it will materially improve your finish!

The TOUGHEST—MOST MAR-PROOF finish you've ever tried. Order 5 Gals. at Drum Price with our GUARANTEE.

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« *wax free* REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives

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ORDER TRIAL GALLON AT DRUM PRICE

I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings . . costs less to use . . saves time, labor and material.

SPECIALTY COATINGS—I. C. D. Labs. have specialized in the formulation and manufacture of non-inflammable coatings and substitute finishes. If you have a tough coating or finishing problem send in your specifications, finishing schedule and requirements. Immediate action and a prompt reply promised.

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Clearly Beautiful—

● There's no mistaking furniture finished with PERFECTION—the *clear, transparent* flat finish. Wood grain and stain stand clearly revealed—rich, warm, beautiful. Appearance-wise and dollar-wise, furniture value is materially enhanced.

Yes, PERFECTION Flat Finish is truly unique. Product of modern synthetic chemistry, it is entirely free of beauty-masking stearates—*always clear, always transparent.*

What's more, PERFECTION is easy to apply, quick to dry—it's waterproof and liquor-proof, too. For convincing proof, try PERFECTION Flat Finish in your own plant. Write for free samples.

PERFECTION
PAINT & COLOR COMPANY
Indianapolis 2, Indiana

in the application of science to the improvement of living standards.

* * *

Fast Reconversion—Despite the fact that 85% of its wartime output was earmarked for the military services, the fastgrowing plastics industry has lost little time in getting into full civilian operation. In fact, some observers expect that the first full year of peacetime sales will actually exceed the 1944 total of 350 million dollars.

The use of plastics in the millions of radio sets that will soon be pouring off the assembly lines should shatter all previous records. In addition, the automobile industry is placing huge orders. There will soon be, in all probability, an important trend toward the use of plastics in the furniture industry.

* * *

New Titanium Sources—Anticipating an enormous expansion in the paint industry, American lead companies are preparing to open new titanium mines in Ceylon, Australia and the Malayan Peninsula. Besides its use in paints, this pigment is needed in the manufacture of whitewall tires and in the whitening of paper products. Even these new sources of supply may not be sufficient to keep up with the steadily rising demand.

* * *

Atomic Prospects — Although popular writers have been making fantastic prophecies on the subject of the atomic bomb, declares *Power* Magazine, it can be stated with confidence that the large-scale, controlled release of heat energy from U-235 has been fully demonstrated.

Beyond question, continues this authoritative source, such energy could be applied directly to the heating of water and air, and to

Remove.. PRODUCTION
LINE DUST · LINT and
SAND PARTICLES
MAKE YOUR FINISH
TACK OFF THOSE SPECKS
SPARKLE
Crystal
TACK RAG
Speed Up Your FINISHING PRODUCTION LINE with this Soft Tacky Cloth
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The NEW M-S-A CHEMICAL CARTRIDGE RESPIRATOR

OFFICIALLY APPROVED BY THE U. S. BUREAU OF MINES

This new M.S.A. Respirator provides respiratory safety for industrial finishers against harmful paint spray vapors, degreasing solvents, paint removers, etc. New floating cushion facepiece assures easy comfort; flat exhalation valve lessens breathing resistance; chemical cartridges are quickly replaceable. Write for details!

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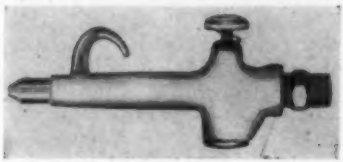


Leakproof Air Blow Gun

Use this gun for blowing dust, dirt or lint from the surfaces of parts and products to be coated with paint or any other kind of coating. It will improve your finish tremendously.

Also useful for blowing out moisture or other entrapped liquid from crevices, seams or indentations in parts to be cleaned or painted.

Fits comfortably in the palm of hand. Has button control air valve. Special composition washers prevent leakage. We can furnish any type nozzles—round, pointed, flat or 10-in. extension. Nozzles are interchangeable and renewable. Every plant should have one or more. Write us!

G. M. MANUFACTURING CO.
Engineers, Mfrs. of Complete Spray Equipment
216 N. Clinton St. Chicago, Ill.

steam production. The heat, in turn, could be applied directly, or converted into mechanical power or electricity by conventional steam turbines and gas turbines.

"If and when U-235 in concentrations up to 10% is made available, at prices under $25,000 per pound," concludes the McGraw-Hill publication, "it will find applications—but in competition, at first, with premium fuels rather than with coal."

* * *

Coatings For Paper — The development of wrinkle finishes for cloth, paper, felt and other materials was discussed with enthusiasm in a recent issue of *Business Week*. The magazine points out the enormous field that has been opened up by the introduction of industrial paint coatings which require no baking.

These newly-developed wrinkle finishes, which are based on synthetic rubber and domestic drying oils, eliminate an expensive operation, besides opening an enormous market for the sale of paints to coat flammable materials.

* * *

Factory-Built Homes — If the dreams of the Goodyear Tire and Rubber Co. come true, in the not-too-distant future it will be possible for thousands of low-income families to purchase a home in the morning and occupy it before nightfall. Production of these units has already been under way for several months at a pilot plant in Litchfield Park, Arizona.

When ready for shipment, each house is 8-ft. wide and 26-ft. long, permitting transportation on any highway without special permit. Each home will have three rooms and a bath, will be thoroughly insulated, and will be fully wired for electricity. *(Cont'd page 145)*

COMPLETE Finishing SYSTEMS

Typical Mahon Hydro-Filter Spray Booths installed in an enclosing Spraying Room which is equipped with Overhead Air Supply Units through part of which a conveyor—part of a Complete Mahon Installation.

Metal Cleaning Machines, Rust Proofing Machines, Hydro-Filter Spray Booths, Ovens of All Types, Filtered Air Supply Units, Hydro-Foam Dust Collectors—and Many Other Units of Special Production Equipment—including Complete Finishing Systems.

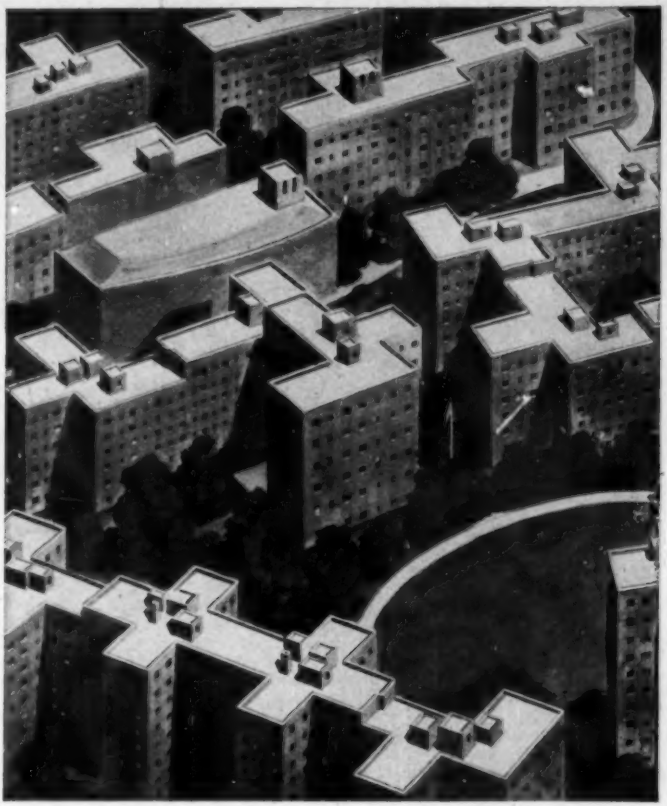
. . . and it DOES make a DIFFERENCE

The fact that over twenty years' experience in this field has endowed the Mahon organization with a wealth of technical knowledge not available to you elsewhere; that this experience and knowledge go into the engineering of every Complete Mahon Finishing System; that every Complete Mahon Finishing System is built entirely within the Mahon plant; that every Complete Mahon Finishing System is installed exclusively by the Mahon organization, makes a whale of a difference . . . it makes a difference in the precision engineering and coordinating; it makes a difference in the materials, equipment and appearance; it makes a difference in the completion date, and the manner in which the Complete Finishing System is installed in your plant . . . and lastly, and of utmost importance to you, it makes a tremendous difference in overall operating efficiency. Yes Sir, it does make a difference, when the Mahon organization is responsible.

THE R. C. MAHON COMPANY
Home Office and Plant, Detroit 11, Michigan
Western Sales Division, Chicago 4, Illinois

MAHON

Do you know...?



Q. America's largest private housing development is:

☐ **Parkfairfax, Alexandria, Va.** ☐ **Parkchester, Bronx, N. Y.**

☐ **Parklabrea, Los Angeles, Cal.**

A. Parkchester, Bronx, N. Y., built by the Metropolitan Life Insurance Company, covers 130 acres, contains 12,272 apartments. Hundreds of cases of Permacel paper masking tape were used in two-tone painting of Parkchester's corridors. One color was applied over the general area. Then a strip of 1½" Permacel was used to make a sharp color separation.

No. 22 in a series

Q. The wood that resists variations in climate best is:

☐ Oak ☐ Maple ☐ Plywood

A. Plywood. Toughness makes it suitable for radio masts. Sections of a mast contain layers of veneer. Permacel high-temperature tape holds each layer while others are added. Tape holds tight while sections are baked.

Q. The title of this booklet refers to:

☐ Electricity ☐ Tape ☐ Plastics

A. Pressure-sensitive tape. This free booklet shows how Permacel Industrial Tapes save time and cut costs. Gives many new uses to help you solve production problems. Write for free copy. Dept. IF-22, Industrial Tape Corp., New Brunswick, N. J.

Q. How soon will air-conditioning units be available to industry?

☐ Now ☐ In 6 months ☐ In 1 year

A. Available now and increasing in supply daily. Best installation of air-conditioning units requires sheet-metal ducts of various lengths, hung ¼" apart. Permacel cloth tape (Jonflex) is wrapped around each duct, reducing vibration noises.

IMPORTANT: *Our research laboratories are at your disposal for development of special tapes to meet special needs.*

Permacel Industrial Tapes

INDUSTRIAL TAPE CORPORATION

New Brunswick, N. J.

"PERMACEL" REG. U. S. PAT. OFF.

Celanese® Chemicals

A skyline view of one section of the Celanese Chemical plant at Chemcel, near Bishop, Texas.

CELANESE CORPORATION OF AMERICA

GREATER VOLUME
to meet more of industry's specialized chemical needs

EXTENSIVE FACILITIES for producing Celanese Chemicals at Chemcel, near Bishop, Texas, mark an important forward step of the chemical division of Celanese Corporation in meeting the growing chemical needs of industry.

This huge plant has modern facilities for the conversion of natural gas by special processes to many versatile chemical compounds, such as acetaldehyde, acetic acid, acetic anhydride, acetone, formaldehyde, methanol and butadiene.

This expanded base of operations will support increasingly broad research by Celanese in all three related fields — textiles, plastics and chemicals. Celanese Chemical Corporation, a division of Celanese Corporation of America, 180 Madison Avenue, New York 16, N. Y.

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ORGANIC PHOSPHATES
LUBRICANT ADDITIVES
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This Book May Help You Pick

THE FINISH FOR YOUR NEW PRODUCTS

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THE FINISH FOR YOUR NEW PRODUCTS

Polymerin Finish Dries Faster, Stays Beautiful Longer!

"The Facts on Polymerin" describes the two-way competitive advantages you can gain by finishing your postwar products with durable, speed-bake Polymerin.*

Polymerin is an organic baking enamel with unusual properties of durability and resistance . . . properties which may be varied to meet the individual requirements of such products as refrigerators, stoves, washing machines, bicycles, lamps, fluorescent reflectors, artificial tile, kitchen and under-sink cabinets, gasoline pumps, venetian blinds, vending machines and other appliances.

Polymerin stays beautiful longer! Impartial tests have shown that Polymerin is nine times harder to chip than ordinary enamels. And Polymerin—the original speed-bake finish—offers production advantages, too. For Polymerin's faster drying results in savings which can help you keep your finishing costs low!

Use the coupon below to get your free copy of "The Facts on Polymerin", a 32-page booklet which presents clearly and factually the sales and production advantages of a Polymerin finish. This information-packed booklet is yours for the asking . . . send for a copy today! *Reg. U. S. Pat. Off.

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A PRODUCT OF AULT & WIBORG

DIVISION OF INTERCHEMICAL CORPORATION

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Company .....

Address .....

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AN INSTRUCTIVE BROCHURE ON INFRA-RED

and it's YOURS

IT TELLS THE COMPLETE STORY AND SHOWS BEAUTIFUL INSTALLATIONS OF INFRA-RED

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A SUPER WRINKLE ENAMEL FOR PRODUCT FINISHING

- ANY COLOR
- ANY TEXTURE
- PERFECT ADHESION
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YOUR INQUIRY WILL BE GIVEN PROMPT ATTENTION

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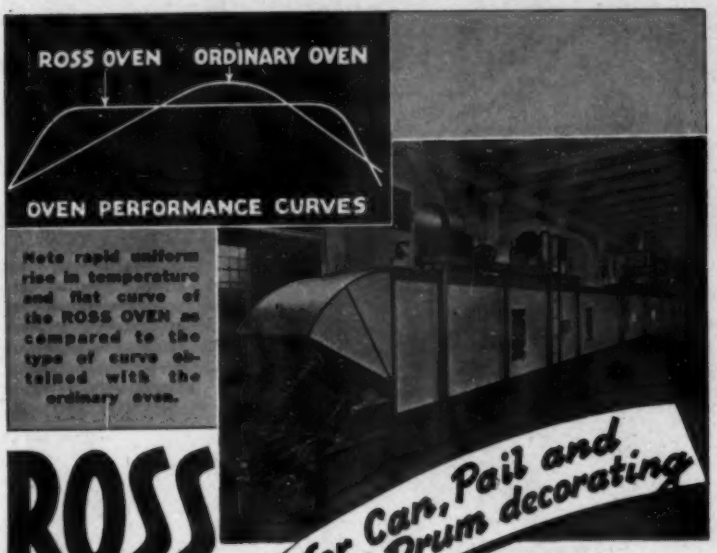
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ORDINARY OVEN
OVEN PERFORMANCE CURVES
Note rapid uniform rise in temperature and flat curve of the ROSS OVEN as compared to the type of curve obtained with the ordinary oven.

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for Can, Pail and Steel Drum decorating

Metal Lithograph Oven

Its advanced design meets all the exacting requirements for automatic control, absolute uniformity of temperature across the sheet, maintaining any predetermined temperature curve throughout the length of the oven—no hot spots. Independent zones, each with its own circulating system and control, large volumes of air uniformly circulated throughout the oven, fast uniform adequate cooling—all combine to make this the outstanding oven for metal lithographing. The facilities of our Laboratory are available for determining your particular conditions and requirements. Write us—no obligation.

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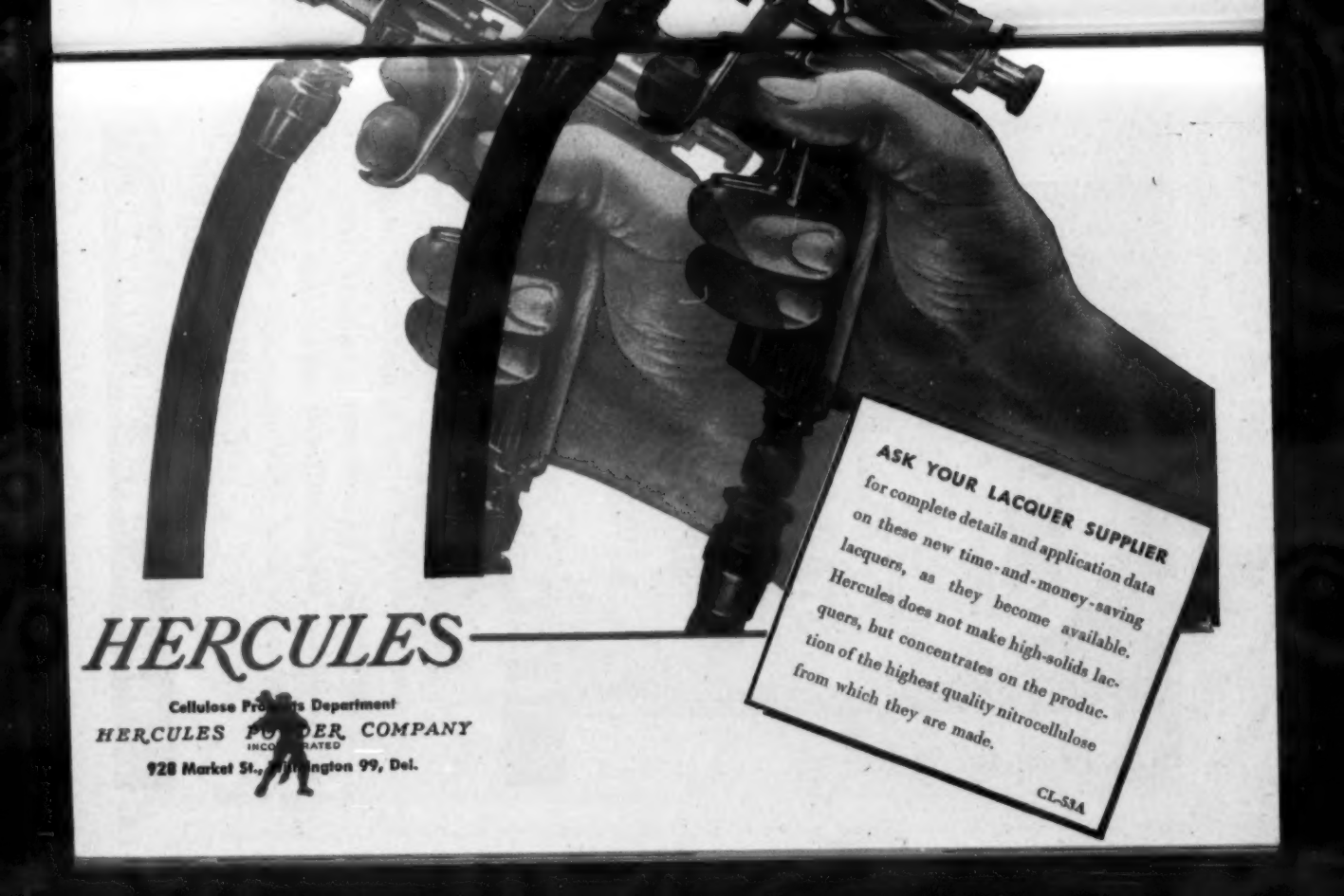
New high-solids lacquer . . .

The new high-solids lacquers can give twice the covering power of old-style lacquers . . . enable operators to complete more pieces in a given time . . . because they provide far thicker coatings when dried. Each coat now does the work of two! The answer is more solids, less solvent. Yet, despite the new finishing speeds and economies afforded, their durability and appearance are not sacrificed. For production line finishes on metal, wood, fabric, glass, rubber, leather, paper, plastics—use high-solids lacquers and save!

»LIKE GIVING EACH SPRAY OPERATOR TWO GUNS


ASK YOUR LACQUER SUPPLIER
for complete details and application data on these new time-and-money-saving lacquers, as they become available.
Hercules does not make high-solids lacquers, but concentrates on the production of the highest quality nitrocellulose from which they are made.
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Cellulose Products Department
HERCULES POWDER COMPANY
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Industrial Finishes
that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

• FOR APPLICATION BY ALL METHODS

JAMES B. DAY & CO., CHICAGO

Get *Your* Finishing Department in Production FASTER with a complete DESPATCH SYSTEM

FIELD SURVEY

ENGINEERING

PRODUCTION

INSTALLATION

Save weeks or months of delay!

By delivering and installing your complete finishing system *weeks or months* ahead of most schedules, Despatch Engineers offer you a valuable and timely service. **Your products will not only reach the market sooner, but they'll have the kind of finish that only an ultra-modern system can provide.**

WHY PROMPT DELIVERY IS POSSIBLE

To provide fast, competent service like this, particularly in a highly specialized field, requires an unusual engineering organization. Here is what Despatch offers:

1. Largest Engineering Staff in the industry. There are over 110 experienced Resident Engineers and Field Engineers, every one a picked specialist! Offices from coast to coast. Your finishing needs are exhaustively analyzed to the last detail. Assures correct selection, design and performance of all equipment.

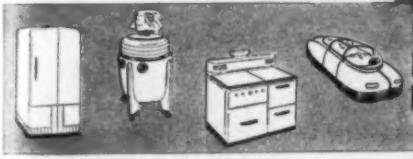
2. Huge Production Facilities with one of the largest, most up-to-date plants in the industry. Ample floorspace, adequate stocks, tools, modern high speed machinery. Streamlined, efficient manufacturing methods. Makes it possible to get *your* job out fast!

3. Immediate Installation After Delivery. Eliminates a common source of delay. Competent Despatch Installation Engineers erect, coordinate and adjust your finishing system units for maximum efficiency in performance.

TAKE ADVANTAGE OF THIS SERVICE!

Our 43 years specialized experience will help you save time, reduce costs and get a complete Finishing System installed in your plant faster.

FINISH BAKING OVENS *(Conveyor or Batch Type)*, **SPRA-BONDERIZERS, DRYERS, AIR CONDITIONERS, SPRAY BOOTHS, CONVEYORS**



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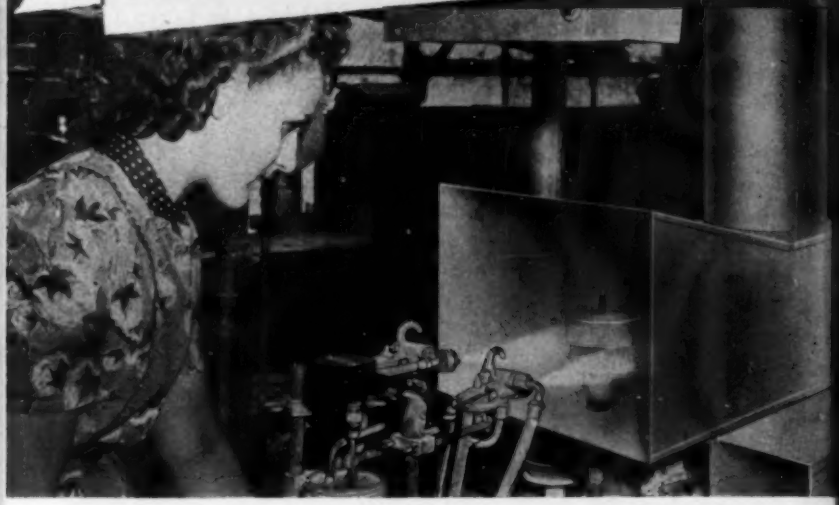

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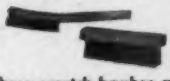

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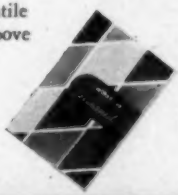

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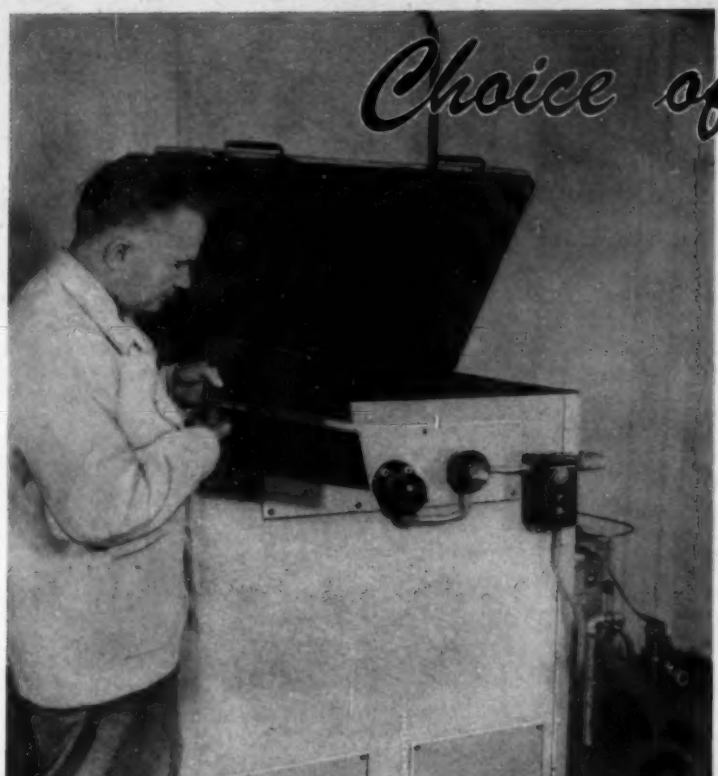

Holding two panels, one of which was subjected to salt spray test in cabinet.

What the modern protective and decorative coatings are made of; how to select certain brands of material for testing, and which tests to make to determine relative merits of a finish for your specific production needs.

Organic Finishes

By P. W. PROUTY
Westinghouse Electric Corporation

SELECTION OF A suitable protective or decorative coating depends upon many variables. While no definite plan or set of rules can be universally adopted, some considerations are basic and can be applied to all jobs. There are five classes of modern paints—oil, varnish, synthetic varnish, lacquer and water-emulsion paints. An enamel is formed by dispersing pigment particles into these paints to obtain the desired colors

The use of drying oils and gum resins dates back to the 3rd or 4th century B. C. Oils and resins were developed separately in different countries and there is no record of combining the two materials into a varnish until about the first century A. D. The Egyptians used soft gums, resins and asphalt applied by melting and spreading. There is no present evidence that they used harder copal resins or any drying oils, although both the hard copal resins and linseed oil are found in Africa. Pliny describes the dissolving of resins in walnut and poppy oil both of which are drying oils, thus indicating that the discovery of varnish was somewhere about the first century B. C. However, its present name of varnish is derived from Bernice, who apparently was a popular yellow-haired blond Mae West of those days and was a queen in the third century.

The first record of varnish making giving methods and formulations are from the records of the priests of St. Gall in the 10th century. From this small beginning until the middle of the 19th century paints and varnishes were made in secret by methods handed down from father to son with no knowledge of the chemistry involved. The majority of varnishes were made by using linseed oil as a drying oil and whatever resin happened to be locally available.

What Paints and Lacquers Are Actually Made of

Paints as they have been known for centuries are really oil enamels. They are mixtures of drying oils, driers, pigments, and solvents or thinners. The natural drying oils such as linseed and tung, are all found to be unsaturated, straight chain compounds containing 18 or more carbon atoms. On oxidation with partial or complete saturation the oil jells, producing hard clear rubbery or leathery films having good durability and adhesion to most metals. They resist the action of the elements quite well. Boiling or blowing to partially oxidize them improves their flexibility, gloss, and speed of drying. Blowing resists the acidity, and more recently hydrogenation and even separation of the drying oil from the edible and non-drying portion have been carried out to improve the product.

Resins are hard, horn-like and amorphous solids. Natural or fossil resins are the dried remains

of pools of plant gums or saps. Age, heat and pressure have removed the more volatile or more active portions, leaving the durable resin. Films from the solution of these resins in oil have much improved hardness, brilliance, water and alkali resistance and acid resistance. The result has been an almost complete adoption of varnishes as a basis for decorative, protective coatings. Two notable exceptions are the oil finishes of gun stocks and of dining room tables. Since both of these articles are subject to very frequent minor abuse, it is much easier to pick up a little oil and wipe them a little, than it is to sand out a defect in an enamel and try to refinish that.

Fossil resins are found in relatively small pockets hidden away in the earth in isolated and sparsely inhabited spots. Great variations occur in the shipments to domestic markets. Careful selections of the resins and modification of the formulations compensate for resin variation, and the mixing of large numbers of the small varnish batches during manufacture makes possible the present day uniformity of the oleo-resin varnishes.

When Synthetic Resins Came in Finishes Really Improved

The greatest improvement in varnish products came with the introduction of synthetic resins. The first to be used probably was estergum. This was formed by treating ordinary resin or olophony with glycerin to form a pale, harder, stronger resin giving better moisture resistance than varnishes made from most of the usual fossil resins. The second resin was probably the use of phenol-aldehyde, sold under the trade name of Bakelite. This was done in 1909. Since that time several thousand plastic materials have been tried. These include both the thermo-setting and the thermo-plastic type, and range from very hard resins to the soft, elastic or plastic materials.

Synthetic resins may be modified by either natural or other synthetic resins to obtain the desired properties. In some cases the final polymerization or condensation of the resin or the co-reaction of several resins occurs at the same time —at the time of curing the film. In some cases they are completely reactive and dissolve in suitable solvents for use as pure varnishes. The trend is definitely toward mixtures which do not contain any oxidizing materials, the reason being the high speed of curing. It is only necessary to drive out the solvent and cure the finish by heating. The finishing time on some isolated high volume products has been reduced to a few seconds by this development. Adoption of synthetic enamels in all cases has resulted in improved quality, reduction in processing time or reduction in repairs and rejects. Another and probably the most important advancement due to the use of synthetic resins is that many durable pale resins are now available which do not darken the curing cycle or during long periods of use, even in warm locations. This has made possible the use of brilliant light colors and white, notably refrigerator finishes, having five to six times the durability that was possible ten years ago.

Names of Synthetic Resins Now Used in Finishes

At the present time the most important resins used for finishing enamels are, in the order of their importance, phenol-aldehyde, alkyd, urea-formaldehyde vinyls, and

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aceryloids. Among other resins now being brought into more prominent use, either to modify or replace some of the above, are melamine, maleic styrene, polyvinyl chloride, superpolyamide resins, and allyl. These resins do not include many which may prove to be even more important in the near future but which because of their color, cost, or intricate application technique, are now available only as improved, protective coatings. The more popular of these are rubber paints, and synthetic rubber-like materials. At present these are only successful when specially formulated for isolated applications. It should be remembered that each of these resin names covers a whole family of products. That is, any phenol may be a reaction of a formaldehyde, and the conditions of reaction may be changed to obtain many different grades of phenol-aldehyde.

Phthalic acid glycerin resin is the usual alkyd, and there are many grades and characteristics available. However, any resin formed by the reaction of any poly basic acid and any poly acid alcohol may be classed as an alkyd. No one clear cut set of characteristics can be expected just because a varnish is called by its synthetic name as an alkyd enamel or bakelite. The characteristics in each case will depend upon the grades of the resin, percentages used, methods of formulation, and, last but not least, the method of application.

Chief Characteristics of Certain Synthetics

Assuming that the paint formulator has developed the optimum conditions for the varnish, a number of generalizations can be made. Alkyds improve the adhesion, water and electrical resistance of phenolics and reduce electrical surface creepage. Phenolics improve the hardness, gloss and mar resistance of alkyds. In combination with the additional modifiers and where decorative as well as protective finishes are required, they prove the most durable metal primers known.

Urea-formaldehyde is a very durable pale resin which solidifies by polymerization on heating. It does not discolor at the curing temperature required, will withstand some excess temperature for a long time and ages without fading or yellowing appreciably. This thermo-setting plastic provides a very high speed finish. In combination

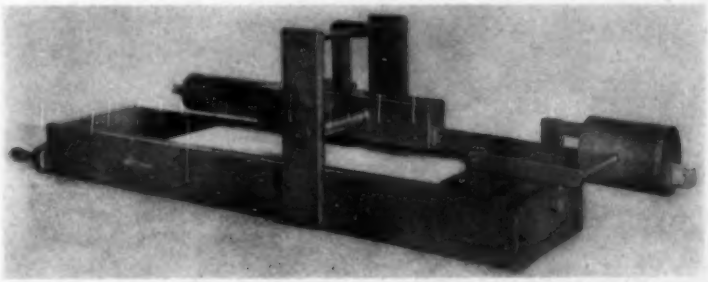

Fig. 1—Mar resistance, adhesion and hardness of finishes are checked on this machine which utilizes a uniformly varying weight and a carboloy cutter.

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PERMITE READY MIXED ALUMINUM PAINTS

with suitable modifiers it makes possible pastel colors or a brilliant white finish. It is the basis of all modern refrigerator and washing machine finishes.

Melamine resins improve the coatings having urea-formaldehyde base by improving the gloss, mar resistance, grease resistance, alkali and moisture resistance, color retention, and adhesion to other plastics such as phenolics. The resin apparently is not good alone but as a substitute for urea-formaldehyde. Its use will probably be confined to modifying other resin combinations.

Vinyls now provide the most chemically inert resins which we have. Unfortunately, they are readily attacked by most of the commercial solvents. They are thermo-plastic. In the past the method of using these resins was to dissolve the pigmented resin chips into the most suitable solvents, usually ketones, to add plasticizers if desired, and to dilute to the desired consistency and apply. The solvent is then completely flashed off at room temperature or very low bake, and the film is brought up to the setting temperature of the resin. A temperature of 250° F. for 12 to 15 minutes, up to a maximum of 310° F. for a few seconds has been found to be satisfactory.

Great care is required in cleaning and application, as to resin poisons easily if soluble metal salts can be formed at the interface. This causes complete lack of adhesion and eventual and rapid breakdown of color and film strength. It is satisfactory on good bonderizing but not on partial bonderizing nor on pulverant, or red type of bonderizing. Therefore, extra care must be taken in bonderizing to get good results.

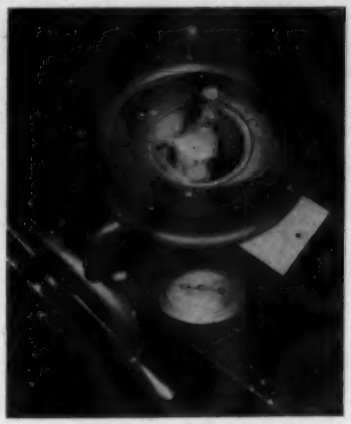

Fig. 2—Flexibility tests, made with a standard Olson machine such as is used in the draw testing of steel.

Acrylic resins are most prominently known from the use of methyl methacrylate plastics. This is not the best acryloid for the paint film formulation which is still a closely guarded secret. I cannot tell you whether the acrylate is used alone or modified with other resins or plasticizers. The enamel is thermo-plastic and was recommended for use at the operating temperatures between -50 up to 130° F. It has very good adhesion to tin or brass.

Prehistoric and Present Lacquers for Finishing

It is not possible to consider the thousands of resins now available or being created. Some will develop and replace some of the resins discussed. It should be born in mind, however, that a resin making an excellent plastic may not have the proper characteristics to make durable films for protective and decorative coatings.

Prehistoric lacquers were simply

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210-A DEOXIDINE has a double action. It removes mill oil, drawing compounds and shop soil from the metal and at the same time prepares the surface properly for finishing.

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spirit varnishes; that is plant or animal gums dissolved in suitable thinners. Since about 1860 commercial lacquers were assumed to be nitrocellulose base. The greatest development and improvement has taken place since 1921. By proper selection, a variation of over 300 to one can be made in the viscosity at the same per cent solids or the weight of solids in the lacquer at the same viscosity, so that a wide variety of characteristics in lacquers can be obtained.

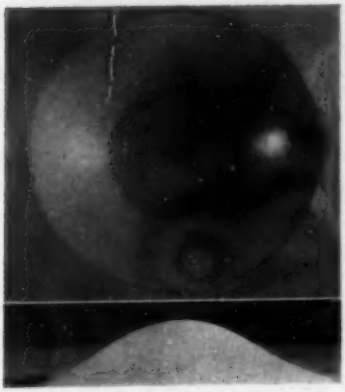

Fig. 3—This sample, checked for flexibility, showed small circular cracks.

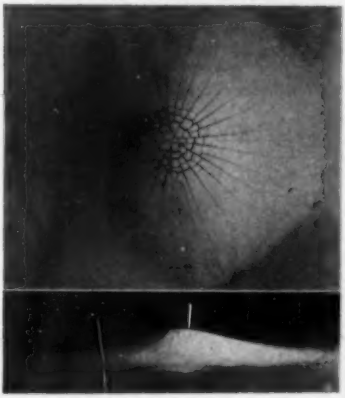

Fig. 4—A brittle finish will fail, showing a series of star cracks when subjected to flexibility tests.

Nitrocellulose, although tough and horny, tends to become brittle and also has no adhesion to metal. Therefore, it is necessary to add suitable resins for adhesion, other resins to obtain gloss if desired, and plasticizers to retain flexibility. Resin solvents are not good nitrocotton solvents. Several completely miscible solvents must be used which are completely compatable and have the same evaporation rates, so that neither the resin nor the nitro-cotton will precipitate during film formation. The rate of evaporation must be controlled so that moisture will not precipitate from the surrounding air; thus causing separation or blushing.

Since the introduction of synthetic resins, present lacquers so-called may contain no nitro-cotton and may be 100% resin solutions. This has resulted in enormous improvements in quality, but not to compare with the improved durability obtainable by the use of baking synthetic resin varnishes.

All of the recent improvements in varnishes and lacquers are most clearly noticeable in the decorative enamels. The pigments used must be carefully considered. All of the resinous materials used act as weak organic acids. The pigment materials may react with the acid, changing the adhesion, flexibility, durability and life, as compared to the value for the original varnish or lacquer vehicle. In many cases this can be used to advantage and improvements are made in the overall characteristics by the use of proper pigments in the enamels. *(To page 46)*

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—THEY REMOVE RUST THOROUGHLY—DESTROY THE RUSTERS.

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How Finishes are Selected For New Products

In many establishments that use finishing materials, finishes are still selected by the trial and error method. The color scheme is generally suggested by the designer or artist, or many times by the sales or engineering departments. The final color and gloss are always compromised, depending upon the ability of the supplier to modify his product to take care of local manufacturing conditions.

For instance, the conveyor line cannot be changed to take care of one new item, and the supplier must try to produce the desired color and gloss under previously determined time and oven conditions. Experience is the greatest single factor in diagnosing and recommending the type of finish to be used. Some decision must be made to avoid willingly testing too many samples and thereby becoming a test laboratory for the supplier.

Of all the decorative protective coatings, probably the most popular and economically successful finishes today are based on urea formaldehyde. Lower temperatures and high speeds of bakes improve the manufacturing situation. Pale color and non-yellowing or fading characteristics make them invaluable for light colors. Melamines and some alkyds can be used as fortifying agents to improve certain characteristics such as grease or water resistance, without loss of color retention properties. Phenolics, alkyds, or natural resins can be used on darker colors to increase or decrease flexibility, mar resistance and adhesion so that enamels can meet almost any set of requirements that can be designed.

Where color stability is of secondary importance, or where dark colors are to be used, or if there

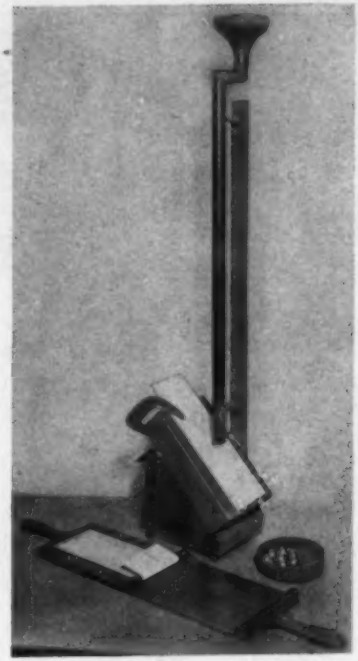

Fig. 5—Impact tests are made by dropping a 1-in. steel ball on a sample test panel set at about 60° angle; bend tests are made by bending the sample around a ⅜-in. mandrel.

is no heating in service, alkyds or bakelite modified alkyds may prove superior to the finish based on urea formaldehyde. The most durable all-around baking formulas now are probably the bakelite modified alkyds; the combination of several grades of alkyds or modifications with fossil resins or oils produce superior metal primers. However, the new synthetic varnishes are cheaper and give less trouble in the shop.

Pigmentation affects results both in the finished coat and in primers. This, of course, limits the colors,

*CHEMICALS to Clean and prepare metal for painting

Sol-Klean . . . PHOSPHORIC ACID METAL CONDITIONERS

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SOL-KLEAN is used to prepare steel and aluminum for painting. Rust, oxides and oil are removed and corrosion producing agents are neutralized by it. Also, Sol-Klean etches the metal and gives it a thin phospate coating.

For use one volume of Sol-Klean is diluted with 2 or 3 volumes of water. The resulting solution is usually brushed on the metal at room temperature. It adheres to the oily surface, penetrates the oil and mixes with it, and dissolves the rust. Then the Sol-Klean is removed together with the dissolved oil and rust by wiping with rags or flushing with water.

Metal may also be cleaned and treated by immersing it in hot Sol-Klean and rinsing it in water. Sol-Klean is non-inflammable and no noxious or corrosive fumes are evolved.

Sol-Klean is easy to use and can be made an integral part of your production line.

Metal treating and cleaning chemicals for 25 years

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coverage, and workability of the material. It is sometimes wise to get the artist to change colors to avoid loss of durability or color retention, or to avoid troubles in applying the paint. The best recommendation is not to change the present finish unless speed of production, a change in manufacturing location, or a new and more rigid requirement demands it. Investigate and plan to take full advantage of new modern synthetics on all new production lines as a means of conserving floor space, production time, and equipment, and also as a means to improve the durability, appearance, ease of application and overall economy.

Clean Surfaces Necessary For Successful Painting

Pre-cleaning is the most important part of the whole finishing procedure; failure to clean properly accounts for over 90% of all finish failures, providing the finish was selected to take care of the service condition. Surfaces to be painted must be clean and dry. If the cleaning is not complete, invisible traces of oil, grease, finger marks, or cleaning compounds may remain on the surface. Even if it is clean, corrosion may start before the finishes are applied; unremoved dirt and grease may creep out of the metal pores during baking. All of these conditions are not usually seen by the naked eye, but they will cause failures, especially if high humidity or moisture is encountered in service. Paints applied over these conditions may bridge them entirely, with complete loss of adhesion at that point, or they may absorb or react with the impurities to reduce the adhesion or to make the contact more brittle than the surface can withstand.

Metal that has been heavily swaged during forming cannot be cleaned by ordinary methods; in many cases even heavy pickling is not sufficient; the local swaged surface must be sand-blasted. Shot-blasting removes some of the dirt, but it also drives some into the surface. If the protective coating is to be effective, parts to be shot-blasted must be free from oil, fatty acids and dirt. Sand or shot-blasted parts must be protected until the finish is applied. You cannot sand-blast a surface, send it into the shop and machine it, and expect to get out the machining dirt and cutting oil.

The paint salesman is a most optimistic individual, but sometimes in a vague and abstract way; therefore, some method of comparison and selection must be made. We proceed as follows:

Points to Consider When Trying out New Finishes

1) Limit the suppliers to those having experience with the problem.

2) Limit the number of samples from each to one, or occasionally to two. We make it definite that we are not a development laboratory for the manufacturers.

3) Limit number of samples to groups or series which can be carried simultaneously through all of the testing procedure, so that each get as severe a test as all the others in the group.

4) Isolate each characteristic and test for it. (A cycle test or uncontrolled test, such as painting door handles or hanging parts on the walls of chemical laboratory or plating rooms, does not give any comparison to the actual service.)

5) Where possible, devise test methods which at least meet an arbitrary definition of the char-

SUN SPIRITS . . . Degreases and Cleans Small Parts; Replaces Expensive 5-Step Process

An eastern manufacturer cut the cost of degreasing and cleaning small parts in half when he started using Sun Spirits.

Costly equipment, including lead tanks, rubber shoes and gloves, etc., was formerly used in a complicated finishing process.

A Sun Engineer recommended a simple, fast cleansing in Sun Spirits, and, as a result, all the former chemicals were eliminated.

Five operations were replaced with one, and total estimated savings in labor, materials, time, and equipment were equal to one-half of the previous costs.

The fast, spotless cleaning now being obtained in this plant is typical of the performance of Sun Spirits in cleaning parts and machines in hundreds of plants. To remove oily, greasy films cleanly, quickly, and safely, call the Sun Engineer near you, or write . . .

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acteristic and give reproducible and repetitive results in numerical values without personal opinion or prejudice.

6) Where observation and opinion must be used, make enough panels and record as many variables as possible so as to eliminate, insofar as possible, any personal factor.

7) Always put an identifying mark on each specimen; then mix the specimens at random, so that like specimens may or may not have consecutive markings. This helps eliminate the personal factor.

8) Tests are to be within the reasonable limits considering the application.

9) It is of utmost importance to work closely with the shop and get their opinions on any new finishing material or cycle. Better finishes are sometimes harder to apply and we must get their cooperation, to get good economical and successful production.

What Tests to Make and How to Make Them

In making test specimens, dilute, apply and cure the material exactly as the supplier specifies. Vary the dilution or substitute diluent only if necessary to get an improved result. While using the material, check for such properties as percent of solids, viscosity, viscosity as used, settling, uniformity, skinning, separation, and sprayed appearance. That is, check for dusting, drawing from edges, runs, sags, hiding power, and uniformity. After curing, check for blushing, blisters, and separation, seeding, pigment particles, wrinkling, silking and uniformity of color and gloss.

After the test panels are made, it is necessary to let them season anywhere from one to three weeks if possible, since a panel that is

Fig. 6—Some bend-tested samples.

two hours old may not stand up. On the other hand, no product gets into service that fast, therefore it is unfair not to let them stand. Another reason for seasoning is that it tends to even out the properties of the samples; a panel two days old will be many times more durable than one that is but a half a day old.

On all of the panels, mar resistance, hardness, adhesion and film thickness tests are made. The mar resistance, hardness and adhesion tests are made on one machine (see Fig. 1.) The panel is placed on a plane table, which moves back and forth. Over that is a tool post with a cutting tool on it, which we can move and press down and cut into the painted surface. As this panel table moves, it moves the counter balance weight back and forth on the lever, which results in a uniformly varying weight on the cutting tool. Starting at this point, there is 500 grams on the cutter and as the cutter moves, the load on it increases to

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Picture an enamel of such high-white quality that it must be toned down with black to match ordinary porcelain . . . then you have an idea of Synox. This new Arco development has such unusual gloss and hardness that some of the country's leading manufacturers are already using it on electrical appliances and kitchen equipment.

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Tests in the Arco Research Laboratories and by other manufacturers have shown Synox to be highly resistant to stains, hot water, acids, alkali, grease, heat or soapy solutions. It may be applied directly to bare metal, without a prime coat. For full information write today.

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5000 grams at end of stroke. This is a homemade method of testing for mar resistance. The point at which the cutter starts to scratch the surface, is the mar resistance measurement. The point at which it starts to cut in and remove the top coat of enamel, is the hardness figure, that is the hardness of the film. It may be that the primer is softer and is supported a little bit by the top coat but usually the primer is harder and the first cutting point is the hardness of the surface enamel. The point at which it cuts through to metal is what is designated as the adhesion figure. Now this also tells a number of other things about this panel. For instance, if the panel has a nice smooth cut, the material is uniform, and durable all the way through. If the fracture is brittle there is something wrong with the film. The cutter is made of carboly and is cutting into organic compounds and into very soft steel. In 12 years, it has been repaired only twice. Other people say that this is not true hardness, and I'll agree with them with no argument at all. But this does give a numerical value that can be read, and is reproducible without personal prejudice.

Fig. 7—To check for ultra violet fading and recovery, use a Fadeometer.

Tests for Film Flexibility; Bending; Impact

The flexibility test is made with a standard Olson machine such as is used for the draw tests of steel (see Fig. 2.) It is rigged up to make the Errichsen draw, with a ⅝-in. diameter ball, on a 1-in. ring. By this method, the depth of the draw at the point of failure and also the character of the break can be determined. If the character of the break is of little circular cracks, (see Figs. 3 and 4) it is a very flexible and good material. If the draw is very short, maybe a couple of millimeters and then a star fracture occurs, the material is always brittle; this confirms the hardness test. When ever the material is brittle, it checks on the size of the cut by this method. It also gives a definite figure at the point of failure. The only time the tests fail, is when the paint is more flexible than the steel

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Use O'Brien's Gray Primer 7062! This outstanding primer takes the drip out of dipping. It actually flows backward after draining, levelling out to a smooth, clean surface. Beading is completely eliminated.

Extreme stability is another reason for the all-round excellence of this baking primer. It's so stable that dip tank cleaning is required as seldom as once a year!

Gray Primer 7062 is non-skinning and non-settling. Its applied film is flexible, durable, salt-resistant. Write us for its record—outline your requirements.

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NOT THE MOST — JUST THE BEST

itself. This is a much better way of testing than the usual test of dropping a guillotine onto a surface and then by observation, determining which panel holds up better.

When necessary, bending tests are made using a ⅛-in. mandrel (see Figs. 5 and 6.) New modern paint testing laboratories recommend using a cone shaped panel. This results in a very sharp radius at one end of the panel and a very large radius at the other so that the point of failure can be determined by measurement.

On impact tests a 1-in. diameter ball which weighs about 65 grams is dropped onto a panel, which is backed up on a very heavy steel backing, thus there is no indentation of the panel iteslf (see Fig. 5.) It is simply an indentation on the paint which is just like a glancing blow of a hammer that tends to rub as well as knock off the finish. If the material is brittle sometimes one drop will do it, but if it is very ductile it may take 500 or 600 before failure.

On certain types of finish, it is necessary to make heat tests and aging tests to ascertain if the finish will last for ten years on a refrigerator or on a high grade fan. If the panel is put into a low temperature oven (212° to 230° F.) and baked for a certain length of time—200 hours for instance—the increased hardness and increased brittleness will indicate how the material is aging.

Tests for Discoloration

A great many times, it is necessary to test for ultra-violet fading and also for recovery. The regular fadeometer is the most reliable (see Fig. 7). Weathering cycles are inaccurate because the finish on a refrigerator, fan, or any other apparatus is never subject to such treatment. There may be moisture, there may be water, there may be heat, and there may be light, but they vary in amount and intensity in different locations and on different samples. They do not all occur on each one. When the test is made up of a cycle, there is no way of determining which characteristic resulted in failure.

After a panel has been put in sunlight for a certain length of time or exposed to an electric arc, it will fade or darken, but if it is then put in the dark or kept at normal room temperature, a lot of that fading will disappear. If there is any chalking or anything of that kind, the gloss can be checked by the glossimeter. It is simply light collector and a light which reflects across the panel; the photocells pick it up and measure the amount.

Water-soak and Humidity Tests May be Needed

Water-soak tests are necessary on some panels and are made at about 100° to 125° F. Some panels which will not fail under ordinary condensation will fail if soaked in water. Water-soak tests may go as far as 2000 to 4000 hours before one fails.

Humidity tests—and this is just arbitrary and may not be right—are made at 125° F. and 100% humidity. It is done by venting live steam and air into the top of the room. There is not very much strafication. On some types of materials, it is necessary to make a cycle test at this point. In other words, some paints will soak up a little moisture, they will soften a little bit, and then they will stay just about as they were. They won't fail by blistering or crazing or checking. They may dull down or discolor a trifle, but they are

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- *Because* **DURANITE** is a high-speed production finish with *extra* qualities of durability, eye appeal and ease of application.
- *Because* **DURANITE** is ideal for finishing refrigerators, ironers, stoves and countless other metal products.

DURANITES are plastic-base finishes made in various grades to meet special requirements — come in whites, clear, colors and in any desired sheen. They may be applied by spray, dip or roller-coat and can be baked with infra-red or convection heat. They cure in minutes! Let us know your finish problems and we will be glad to recommend the DURANITE that will solve them.

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ATLAS POWDER COMPANY

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SPECIALIZED PRODUCTION FINISHES... *Doing Tomorrow's Job Today!*

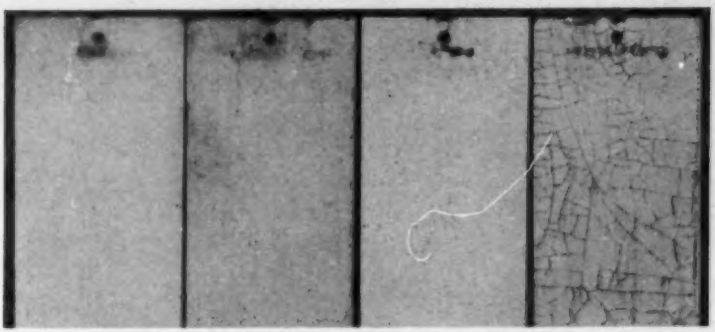

Fig. 8—Intermittent humidity samples, after being subjected to a test cycle consisting of 16 hours in 100% relative humidity, at 100° F., and eight hours in dry atmosphere at room temperature.

still pretty good. On the other hand, those same finishes, if put into a cycle test and allowed to dry out periodically will fail. That is especially true of materials which are made for exceptional grease resistance and which sacrifice some of the water resistance qualities to gain in grease resistance. What probably happens is a swelling up of the film due to the absorption of moisture and when it dries out, the material is so hard it cracks.

Grease and Oil Resistance

Any organic finish will eventually fail in grease or animal or vegetable oils. The one that will give the least trouble should be selected. Grease resistance panels are made by taking a panel and smearing one half of it with a mixture of 50% oleic acid and 50% lard oil, and placing it in an oven at 230° F. for 200 hours. The panel is examined about every 24 hours to determine if all the grease has been absorbed—in which case more is added. At the end of 200 hours, it is taken out, washed with a mild soap, and examined. In some cases the finish is lifted just as if a varnish remover had been acting on it. In other cases, there is simply a little discoloration. Then a new scratch and bend tests are made for comparison with original. Sometimes the finish is apparently improved. The grease lubricates the top surface so that the cutter slides over.

There are a number of special tests which are made on occasion such as staining with fruit juices, staining with coffee or tea, and odor tests. It is necessary to check the odors on any finishes going, for example, into the inside of a refrigerator. The method used now is to dilute the amount of air taken in from the sample and the outside room air, down to the point where the odor cannot be detected; in other words, it is a threshold failure, but results are not accurate. As yet, no one has worked out a satisfactory method for measuring odor.

Now the point comes up on how to evaluate all the various factors. One way is to make up a chart and grade all the panels. Each characteristic is given a rating from one to ten. Certain characteristics such as hardness, impact, fading, humidity, color and

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"Beautiful" is the word for it! It started as a rough metal housing of an air conditioning unit and it ended up as the main attraction in the show window. The manufacturer gave it form and function—M & W Hammertone gave it beauty. Investigate Hammertone for your products. This durable metallic finish, which is resistant to heat and moisture, is available in many colors and patterns. It's a finish you'll be proud to have on your equipment.

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To answer your current questions on the finishing of die castings, write for a copy of "Organic Finishes for Die Castings."

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gloss retaination, and ability to be repaired must pass with at least 8 or over.

It takes some judgment to weigh each characteristic in evaluating the finish and, from time to time as experience dictates, the relative weight is changed. Failure of any critical characteristic immediately eliminates the finish. The best finish for the application, or several acceptable finishes may be selected by methods which are unprejudiced, free from personal bias, and which are repreducible. The causes of failure and the characteristics of the finishing system needing improvement are readily shown; therefore the intent of the testing method has been achieved.

Precautions in Cleaning With Solvents

SOLVENT vapors can be injurious to the health. Good ventilation is therefore essential wherever organic solvents are employed. Best procedure is to use properly designed degreasing equipment or a mechanically ventilated spray booth. If a plant which has no such equipment must do a considerable amount of machinery cleaning, it may be advisable to install a special ventilator for handling the solvent vapors.

This ventilator may consist of a motor-driven blower which draws the contaminated air from the breathing level and also from the floor level, where the heavy vapor tends to collect. Small parts may be cleaned under a ventilated hood. Such apparatus is not very expensive, and may be used safely when designed and installed under the supervision of a degreasing expert.

If the amount of cleaning is not very great, individual protection for the workers may be provided by means of gas masks. These should be of types approved by the Bureau of Mines for the specific conditions involved. Where the operator is provided with a mask, however, care should be taken that nearby workers are not exposed to solvent vapors, through lack of general ventilation. It may be desirable to carry out cleaning operations after regular working hours, so that only the protected operators are present.

In some cases natural ventilation, outdoors, or in a well-aired room, may be sufficient for small, occasional, cleaning operations. This procedure may not always be safe, however, since weather conditions are variable.

Workers on or near cleaning operations should be instructed to report promptly to the foreman any strong solvent odor. Symptoms of illness, such as nausea, dizziness, headache or visual disturbances, should immediately be reported to the plant physician or nurse, who must be kept informed of the solvents in use. Some individuals may show unusual sensitivity to solvent vapors, and should be removed from the vicinity of the cleaning operation at once.

Skin troubles may be caused by frequent or prolonged contact with solvents. Where it is not possible to avoid skin contact with solvents, skin difficulties may be prevented by providing workers with protective clothing or creams and good washing facilities.

The chlorinated solvents, such as trichlorethylene, carbon tetrachloride, and perchlorethylene, are not fire hazards, and may be used safely as long as proper ventilation is provided. The petroleum solvents, such as gasoline, benzine,

DULL BLACK ENAMEL NO. 110-115

Now Available!

ONE TEN - ONE FIFTEEN is a number to remember. It represents an advancement of years in formulation. Perfected for specific use on certain war materiel, it has been closely restricted to the highest priority. With the unusual qualities 110-115 entails, it truly opens a new era in industrial finishing.

It is applied at the highest percent of solids of any Synthetic Enamel we know of, (actually 55%). One coat does the work of three of any other type,—a primer finish coat all in one which dries to handle in three to five minutes. 110-115 may also be baked for short periods of time for unusual hardness and is adaptable to any kind of metal finishing.

Write for further information

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and petroleum ether, on the other hand, are highly flammable, and require extra precautions. Specially designed ventilating equipment, non-sparking tools and shoes, and vapor-proof lights must be provided. Strict observance of "No Smoking" rules and suitable fire extinguishers, conveniently located, are important.

Certain solvent vapors may be corrosive, so that it is not advisable to keep fine machinery in the vicinity of cleaning operations unless there is an efficient ventilating system drawing off the vapors. Otherwise, the machinery should be covered, or the clean-up operation moved elsewhere.—*Safety Research Institute.*

McCaslin Made V.P. & G.M. of Sewall Paint & Varnish Co.

W. C. McCaslin has been appointed vice-president and general manager of the Sewall Paint and Varnish Co., Kansas City, Mo., according to an announcement by Ross Kyger, president. McCaslin formerly held various important positions with the Phelan-Faust Paint Mfg. Co., with whom he had 18 years service. He is also an active member of the St. Louis Paint Club and the Purchasing Agents' Association.

Justice Joins V. J. Dolan

V. J. Dolan & Co., Inc., Chicago, announces the recent addition to its staff of Mr. Walter T. Justice. After spending some time in the Dolan research laboratories, familiarizing himself with Dolan products, Mr. Justice will service accounts in the industrial metal finishing field.

Mr. Justice brings to his new position a wide knowledge of wood and metal finishing, gained at the Douglas Aircraft Co. during the past 2½ years. Prior to that life was in the Chicago laboratories of a large nationally known manufacturer of paints and lacquers. During his 2½ years with Douglas Aircraft, he was finishing engineer at the Park Ridge Plant, where he supervised the selection and application of wood and metal industrial finishes for aircraft.

Hercules to Build Organic Chemicals Plant

Hercules Powder Co. announces plans for the construction of a $1,500,000 organic chemicals and resin plant near Burlington, N. J. When completed, the plant will materially increase Hercules' production of organic chemicals and resins, which are manufactured from basic materials processed in other company plants. The products to be made at Burlington are used in paint, varnish, lacquers, printing inks, adhesives, rubber compounds, and coated textiles. Included in the schedule for future production are some new products and synthetic resins that never have been produced heretofore.

National Metal Exposition in Cleveland Feb. 4-8

Plans have been completed for the first great postwar industrial show, with the announcement that the 27th National Metal Exposition will be held in Cleveland's big Public Auditorium from Monday, Feb. 4 through Friday, Feb. 8, 1946. Originally scheduled for October of this year, the event was moved back to February to avoid any interference with heavy transportation demands.

The Exposition will again be held in conjunction with the National Metal Congress, with the result that thousands of metal men will not only see all the new products in operation at Public Auditorium but will also have the opportunity to hear outstanding research papers presented by scores of engineers and technical experts.

Du Pont Personnel Changes

Personnel changes and the establishment of a new sales development section in the Finishes Division were announced recently by the Du Pont Co.

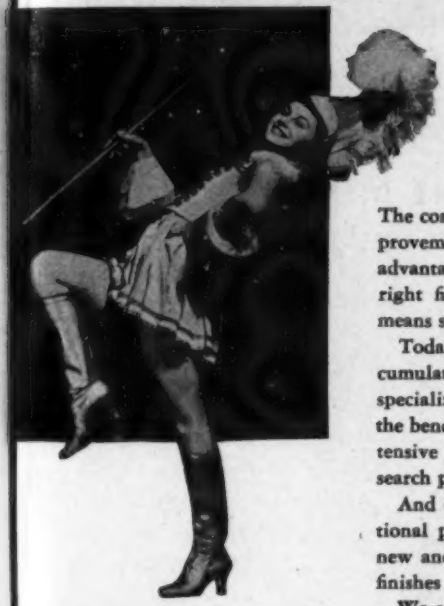
The sales development section is now managed by S. L. Johnston, former distribution manager. D. V. Bauder, merchandising manager, is appointed assistant sales development manager.

J. L. Masterson, trade sales manager in the Wilmington Office, on leave of absence recuperating from an accident, is succeeded by S. L. McSorley, former assistant trade sales manager in the Wilmington Office. Mr. Masterson will be reassigned when his health permits.

C. P. Culp, trade sales manager of the Boston Regional Office, is transferred to Wilmington as assistant trade sales manager.

L. D. Horsman of the Philadelphia Region succeeds Mr. Culp as trade sales manager in the Boston Region.

1946—*The year to be a Step Ahead*



Put it up to Murphy

The company that is a step ahead in product improvement is going to enjoy a really important advantage in 1946. And, as is so often the case, the right finish is a vital factor. Vital, because it means so much in appearance and protection.

Today, Murphy can offer you not only the accumulated experience gained in over 75 years of specializing in individualized finishes, but also the benefit of the Interchemical Corporation's extensive laboratory work in all types of basic research pertaining to coatings.

And don't forget that the war provided additional proof of Murphy's ability to deliver the new and unusual—for over 2,000 individualized finishes were produced in this period.

We are ready now to study your product and finishing methods. Whether the coating is for an airplane or a shoe eyelet—for wood, metal, fabric or plastic—Murphy can furnish the right formulation. Write or phone our nearest office for a talk with the Murphy Service Salesman.

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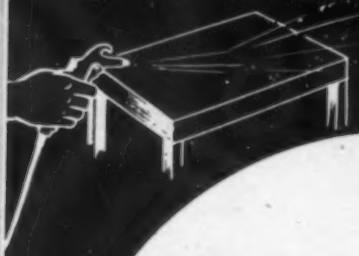

THE BINKS MODEL 190 DUSTING GUN

Here's the dusting gun for steady use with a minimum of fatigue. The Model 190 has a comfortable, well-balanced pistol grip. This gun is perfect for almost all kinds of air-cleaning. It is widely used for dusting or drying surfaces before spray finishing. Its sturdy, simple construction makes it long-lasting, easy to maintain. It can be used with either high or low pressure.

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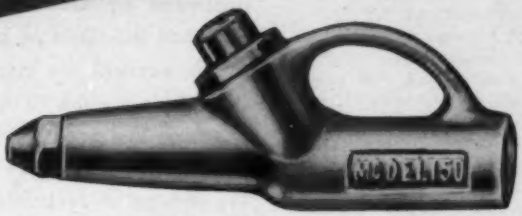

THE BINKS MODEL 150 BLOW GUN

This little gun weighs only a few ounces . . . but it has a thousand and one time saving uses! It is ideal for blowing out borings, chips, filings, dust shavings and dirt. Its small size and powerful concentrated air jet make it easy to clean places where brushes can't reach.

The Model 150 is ruggedly built. The cartridge-type air valve is easy to operate in *any* position without pinching your hand. The gun will work on either high or low pressure lines.

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Cleaning, Conditioning Steel for Painting

Controlled phosphate coating, preceded by thorough cleaning, then followed by painting, offers several merits, among them being much better paint adhesion and greatly improved resistance against rusting or the spread of rust wherever a painted surface is scratched or cut to expose bare metal.

BY ARTHUR P. SCHULZE

APPRECIATION OF the vital influence on organic finishing operations, as exerted by thorough degreasing and proper surface preparation, has increased by leaps and bounds during the past decade. Now, with the nation's manufacturing pendulum swinging to peace products, many manufacturers of metal products—particularly those who in prewar years turned out household appliances, luxury goods and other consumer items—are refocusing their attention on these vital links in the production chain.

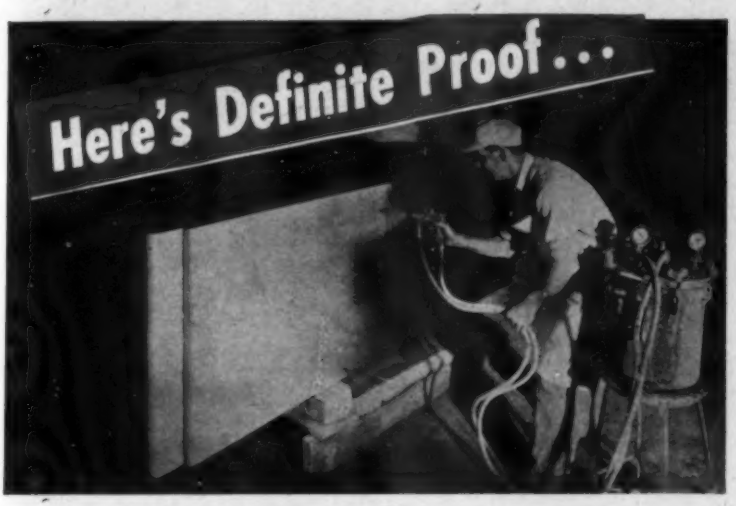
Reasons for this rapidly reawakening interest of manufacturing executives in this particular phase of metal cleaning are, among others, primarily two:

1) New and improved degreasing techniques and surface-preparation methods, designed and engineered to a high state of development since Pearl Harbor. These improved methods have contributed importantly to the finishing of war products to exacting specifications, and maintaining output on the nation's assembly lines at the consistently high level required to equip and supply America's fighting forces.

2) With postwar competition promising to be keener than ever as the battle of the consumer market enters its opening phases, many metal-working plants face the necessity of making production cleaning and finishing changes of one type or another in order to reap the full benefit of the buyer's market forecast by numerous economists. Once again, finishing for decorative purposes will rank on a par with finishing for protective reasons. Once again, because of its acknowledged eye-appeal and pronounced effect on product usage and wearability as well, a lustrous durable finish looms high as a priority weapon in the arsenal of sales strategy.

Metal Cleaning Problem in Reconversion Plans

While various degreasing methods that provided fairly satisfactory results in preparing surfaces for subsequent finishing operations were in wide use before the war, some finishing supervisors hesitated to revamp or revise their production processes, particularly when such a move invariably meant



...that ECLIPSE Saves Material

Proof that Eclipse Low-Pressure spray equipment saves material comes from many users in all fields and with all materials. Here is an actual case:

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the addition of an extra step in the manufacturing cycle. But now numerous production lines must be revised to varying degrees, just as they were when they switched to all-out production for war. This provides an opportunity to establish an adequate metal cleaning and conditioning cycle, without interrupting production.

Clean Metal Necessary for Paint Adhesion

To the manufacturer currently wrestling with reconversion, metal cleaning may pose perplexing problems. For example, metal degreasing treatments that were successful for war production may not prove entirely satisfactory for peace goods manufacture. Where a manufacturer made war products of steel, aluminum or zinc, he may now be planning to make his products of brass, copper or magnesium. Since no one cleaning material may be used with complete safety for all metals, a different cleaning agent will be required to do this vital work with satisfaction and consistent economy.

Perhaps the part or product is to go through a completely new and different series of fabricating operations. In that event, different types of processing oils and fabricating compounds will have to be removed in the degreasing bath, necessitating a change in material and perhaps in method. Also, it is likely that the manufacturer's proposed peacetime products will differ widely in shape and size from his wartime products. Examination of the situation may reveal that the automatic washing machine method is preferable to the use of a degreasing tank, or vice-versa.

These and other equally important factors demand serious consideration. Failure to do so may result not only in valuable time being lost in the reconversion process, but in sub-quality finishing as well. Here is a fundamental fact, founded on and confirmed by years of experience in hundreds of metal-working plants:

Incomplete cleaning or incorrect materials used for surface preparation invite failure of electroplated, chemical or organic finishes or coatings. Poor adhesion increases rejects. Rejected work costs money, delays production, wastes manpower, curtails output.

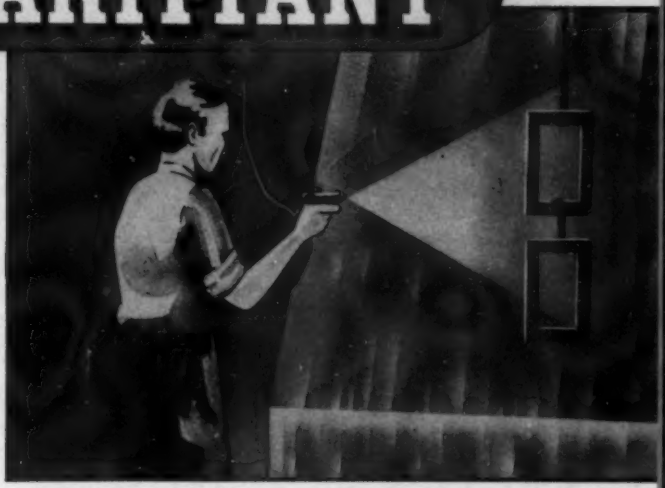
It is little wonder, then, that today many manufacturers, bent on quality control and well aware that this feature originates with correct surface preparation of parts, are critically re-examining their cleaning treatment techniques with an eye cocked toward effecting a new standard of production degreasing efficiency to obtain lower unit costs.

War Production Emphasized Need for Protective Coatings

Of the select number of war-borne degreasing developments and cleaning method improvements which have proved instrumental in expediting production, one of the most significant has been accomplished in the field of preparing ferrous metals (iron and steel) for painting or other organic finishing. So successful has it proved in actual use that production experience and data already amassed indicate clearly that the development is soon destined to play an increasingly important part in the manufacture of civilian goods.

For the sake of brevity and also because of space limitations, the following discussion is therefore confined to a general exposition of this particular aspect of metal cleaning and conditioning.

KLARIFIANT



"twin action" COMPOUND FOR SPRAY BOOTH WATER CURTAINS

When Klarifiant is used in water-wash curtains of spray booths, all causes of clogging and corrosion are removed. The "twin action" or Klarifiant imparts a self-cleaning action in the entire hydraulic system, keeping it free from precipitates and deposits which clog the feed lines.

PREVENTS LIME SCALE

Minerals which are present in nearly all water, have a tendency to "settle out" and form a scale in the feed lines and overflow pipes of the water-wash system. Klarifiant holds these troublesome elements in solution—prevents precipitation—keeps the entire system clean and free to operate at its maximum efficiency.

DISPERSES PIGMENTS

Paints and vehicles which are insoluble in water will deposit sludge and scum in the hydraulic system and cause water breaks and reduction of pressure. Klarifiant keeps these oily and resinous materials in solution by emulsification and dispersion. It is impossible for them to form a deposit and clog the sprinkler heads and water lines. The peptizing action of Klarifiant will not harm the work being done and does not interfere with reclamation of pigment.

ECONOMICAL
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CINCINNATI 3, OHIO
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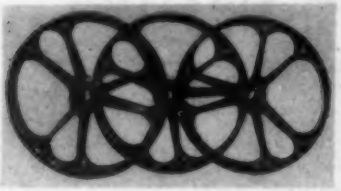

Motion picture reels cleaned and prepared for painting.

The exigencies of global war brought the qualities of good paint adhesion and corrosion resistance in the finishing of iron and steel fabricated parts and products to the fore. Upon leaving the production lines, shells, ammunition boxes, range finders and other war weapons and supplies had to be covered with a paint coat no less than perfect for protection against the destructive effects of the elements—salt sea air, the steaming-hot tropical jungle, the equitorial sun's broiling heat. That really accounted for the Army and Navy being so particular about how well paint sticks to equipment produced for military use.

Manufactured to meet rigid specifications, the paints used in finishing a wide range of military equipment are capable of withstanding extremely severe exposure. But paint, no matter how durable, is only as strong as its bond to the metal. If this falls below required standards, due to improper surface preparation, chipping or peeling of the paint coat soon develops, and rusting, in turn, invariably sets in.

It is commonly known that paint will not adhere to a dirty, oily or greasy surface. Hence, complete removal of dirt, grease and oil is the first requisite of proper surface preparation. There are other factors that merit careful consideration and thoughtful study in preparing steel for painting. While paint for most purposes adheres satisfactorily to a thoroughly degreased surface, it has been found that if the surface undergoes an additional conditioning treatment —such as a phosphate film, for example — superior paint adhesion and greater corrosion resistance are obtained, with the result that the article or part can successfully withstand rough treatment and prolonged outdoor exposure.

Treatment of Clean Steel by Phosphoric Acid

For centuries it has been known that phosphoric acid treatment of clean steel improves paint adhesion and retards corrosion underneath the paint. Yet it is only within recent years that the practice of phosphating steel surfaces before painting or other organic finishing has grown to an appreciable degree. It has become fairly widespread today.

Along with the better materials and application methods discovered through considerable chemical and metallurgical research has come the revelation that real improvement in paint adhesion and corrosion resistance is traceable to the conversion of the surface of the steel into an iron phosphate. This is classified as a crystalline substance that does not rust, and apparently it possesses the ability to bind the paint more firmly than does clean bare steel.

When it came to actual production it was quickly found, during the early experimental and testing stages, that the use of phosphoric acid presented certain difficulties and disadvantages. Chief among these was the necessity of a preliminary degreasing operation, rigid control in its application to

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assure the required deposition of phosphates, and the acid's etching action which has a deleterious effect on metal-washing machines or cleaning tanks.

Cleaning-Conditioning Cycle to Accomplish Three Things

To solve the problem, research chemists and laboratory technicians of one nation-wide organization specializing in the development and improvement of metal cleaning and degreasing techniques, funneled their collective efforts on the quest of a cleaning and conditioning cycle that would perform three operations at one time. First they wanted the process to effectively remove light oils, grease, spinning compounds and shop dirt from the work; second, deposit on the base metal a microscopic uniform coating or film which, (third) retards or prevents rusting of the surface between cleaning and painting operations, provides excellent paint grippage, and prevents corrosion if and when the painted surface is marred or broken.

Such a process, based on the utilization of a special acid detergent, has been discovered. Put into widely successful use in numerous war plants across the country for preparing shells, bombs, projectiles, cartridge storage cases, ammunition containers and other war products for painting, it proved to be an excellent and economical cleaning and treating method. Now it appears destined to have still broader application in the fabrication and finishing of numerous postwar products.

Known as the *CrysCoat Process*, this new technique involves the use of a recently developed, specially formulated acid-cleaner designed primarily for application in pressure-spray washing machines, with complete safety to the equipment. This compound incorporates wetting, penetrating and emulsifying properties in a precisely balanced form so that the material functions in a coordinated sequence of actions, enabling it to provide not only thorough cleaning but, in addition, a chemical action which results in the formation of a protective film.

Technique Developed for Cleaning-Phosphating Steel

Thin and dense, the characteristic coating produced by this process does not result in a detectable dimensional change. Formed continuously while the metal is in the degreasing solution, it does not, like phosphoric acid, depend on the local weakening of the acid at the metal surface. This film is composed of small, tightly adhering crystals which, as a number of carefully conducted tests have conclusively shown, provide an excellent base for permanent paint adhesion. So small are the crystals formed by this new process that they can be observed only by microscopic examination under high magnification.

The chemistry involved in the crystal deposition by this particular cleaning and conditioning compound, differs from that of phosphoric acid by the inclusion of an accelerating agent and the balancing of the constituents in such a manner that the crystals are deposited both uniformly and quickly over the surface, while the metal is subjected to the solution. Application of the compound, furthermore, can be modified where conditions make this necessary, so that coatings of various types may be secured. Whether the solution is

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rinsed off or allowed to dry down on the metal, the film remains.

Here is an illustration of how the material works: Consider, for example, a steel surface contaminated with oils and greases, perspiration stains from handling, and soldering residues ordinarily encountered. On such a surface, the acid detergent follows this train of action:

Typical Illustration of How the Process Works

The wetting agents disperse and spread the solution over the work evenly and permit it to take hold. The penetrating and emulsifying ingredients carry away oil, grease and dirt. The oil and organic acid of finger-print perspiration are removed; soldering residues are dissolved. Then, with these interfering substances eliminated and no longer a problem to contend with, the conditioning agent reacts with the iron, dissolving a portion of it and forming a thin, crystalline, non-metallic coating. An integral part of the surface, this film possesses the oil-adsorbing properties necessary to the bonding of paint.

Plants now preparing steel for painting or other organic finishing by this process are finding that this same coating contains unusually effective rust-inhibiting qualities, which keep the parts treated in perfect condition while in storage for periods of time varying from several days to weeks, depending upon atmospheric conditions in the individual plant. In one factory manufacturing high-explosive shells, for instance, it was found that shells cleaned and conditioned with this detergent would not rust for periods as long as 90 days. As a result there was no need for continuing the practice of oiling threads of shells to prevent rusting during shipment and storage in the loading plant.

Rinsing Can be Included or Omitted, as Desired

Accumulated war production experience and data have revealed that resistance to rusting is increased by efficient rinsing either with water or a diluted solution of the cleaner-conditioner and by rapid drying. Best results, therefore, can be obtained by using a 3-stage washer with the cleaner-conditioner in the first and second stages, employing the third stage as the rinse. Where the finished article is to undergo exceptionally severe service or where prolonged salt spray or water immersion tests of the part or product are required, a chromic acid rinse is employed in the last compartment. On the other hand, maximum durability of the finished item is not always a prime requisite. In such cases the usual water rinse will be effective.

Purpose and Effect of Chromic Acid Rinse

Where the finished article is to undergo exceptionally severe service, or where prolonged salt spray or water immersion tests of the part or product are required, a chromic acid rinse is employed in the last compartment of 3-stage machines. On the other hand, maximum durability of the finished item is not always a prime requisite. In such cases, or where pressure-washing equipment is not utilized, the CrysCoat application may be varied by omitting the chromic acid rinse, or by treating the article in a heated mechanically-agitated tank, or by applying the cleaning-conditioning solution through a steam-pressure gun of

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suitable design. As previously mentioned, the process may still be applied even where a 3-stage washer is not available, still producing, in many instances, results superior to those attainable with other cleaning and treating materials used in existing plant equipment.

Phosphate Coating is no Substitute for Paint

In conclusion, it must be pointed out that the protective film created by this improved process is not intended as a substitute for paint. It is, rather, an effective, easy, economical means of preparing iron and steel surfaces for painting. Since the coating created is insoluble, it shuts water out from the underlying metal to a considerable degree. This coating is somewhat porous, however, and is not therefore intended to replace paint but to provide, instead, an insulating film that prevents spreading of rust.

By absorbing some of the paint vehicle, the coating causes the paint film to be securely held, thus aiding in resisting abrasion and other deteriorating influences. Should the painted article or part be gouged or scraped perchance, the primer over the coating will hold, where otherwise it would be broken. If the scraping removes the primer, too, the resultant rust is confined to the injured areas. Without this coating, the rust might spread under the paint film and cause complete failure of the paint.

Hiding Power of Paint

An instrument by which the relative hiding power of different paint films (dry or wet) can be determined, has been developed by The New Jersey Zinc Co., 160 Front St., New York 17, N. Y. It is called the photronic cell reflectometer and is used by technicians in the company's laboratories.

Metal Cleaning and Rinse Tanks

BY A. P. SCHULZE

BEFORE any protective coating is applied to a metal surface, a thorough cleaning is necessary. Chemical cleanliness is an absolute "must;" upon it largely hinges the adhesion, uniformity, durability and protective value of the finish or coating subsequently applied.

What is cleaning efficiency? It is attained through the correct combination of several integral factors: A suitable cleaning compound; proper equipment; control techniques that help govern temperatures, cleaning time, solution strength, current density, rinsing effectiveness, and handling of the work between operations.

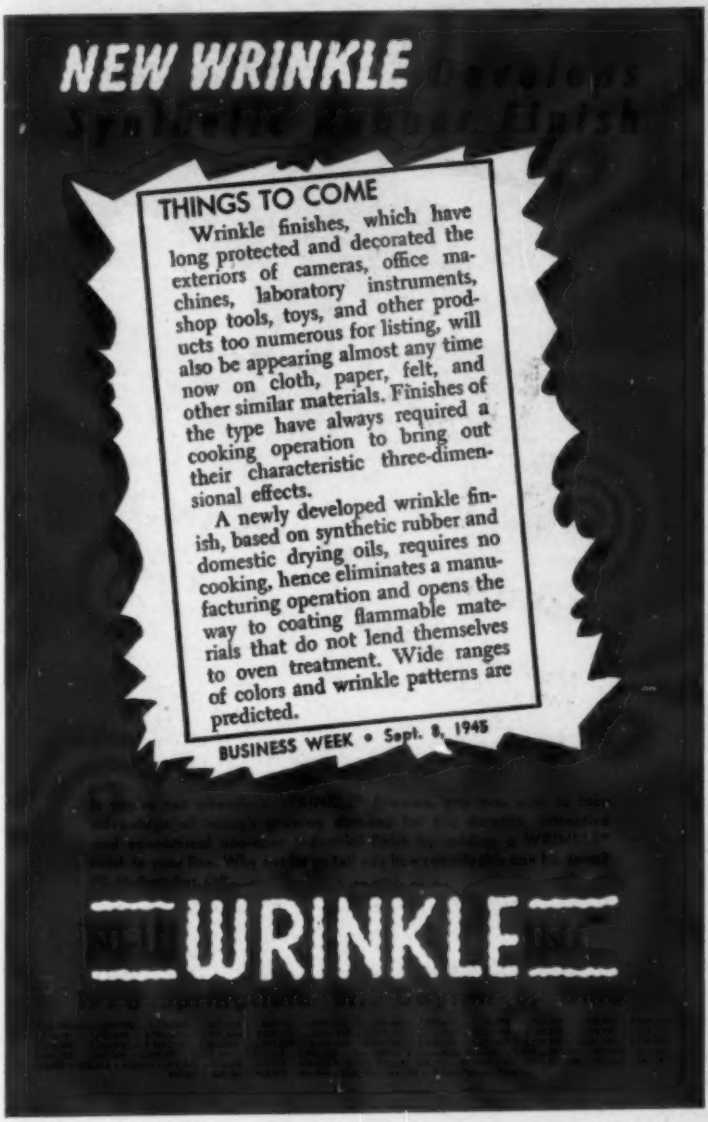
One of the widely used methods of cleaning metals before finishing is to immerse the parts or products into tanks containing suitable cleaning solutions, followed by rinses. In connection with the equipment utilized, it is generally a matter of individual specification or construction. There are, however, a number of important points relative to cleaning tanks to bear in mind—as explained in Oakite's 32-page book entitled, "Cleaning of Metals Before . . . " For the benefit of factory executives who may be contemplating a new cleaning or rinsing installation, these are outlined as follows:

Still Cleaning Tanks

1) Plan on using a tank of sufficient capacity to handle the volume of work required at peak production.

2) Construct the tank of welded steel, of sufficiently heavy gauge. Avoid light gauge metal or soldered joints.

3) Install sufficient heating coils


NEW WRINKLE
THINGS TO COME
Wrinkle finishes, which have long protected and decorated the exteriors of cameras, office machines, laboratory instruments, shop tools, toys, and other products too numerous for listing, will also be appearing almost any time now on cloth, paper, felt, and other similar materials. Finishes of the type have always required a cooking operation to bring out their characteristic three-dimensional effects.
A newly developed wrinkle finish, based on synthetic rubber and domestic drying oils, requires no cooking, hence eliminates a manufacturing operation and opens the way to coating flammable materials that do not lend themselves to oven treatment. Wide ranges of colors and wrinkle patterns are predicted.
BUSINESS WEEK • Sept. 8, 1945
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Lubricants	Bleaches	Pharmaceuticals	Textiles	Waterproofing
Drugs	Ceramics	Oils & Fats	Fibres	Metals
Farm & Garden Specialties	Deodorants	Liquors	Beverages	Alloys
Resins	Disinfectants	Dyeing & Coloring	Flavors	Glues
Cements & Concrete	Laundry Specialties	Fluxes	Rustproofing	Pastes
Synthetic Resins	Dental Products	Explosives	Metal Treatments	Fireworks
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INDUSTRIAL FINISHING Magazine

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or burners to bring the cleaning solution to boiling point quickly. (Chart to help determine the amount of heating coil required to heat cleaning tanks, available from Oakite on request.)

4) Fit the heating coils to the near or working side of the tank. The surge created by the boiling of the solution at the coils will force floating oil across the tank to far side, keeping the working side comparatively free of oil.

5) See that lowest heating coil is 3-in. from the bottom of tank, and that the top coil is 3-in. below usual solution level.

6) Provide for mechanical agitation of the solution by placing a perforated shield over the steam coil. (Blueprint giving complete details of tank and shield construction also may be obtained without obligation, from Oakite.)

7) Provide overflow dam so that oil accumulating on solution surface will flow off.

8) Provide the main tank and overflow compartment with gate valves and crosses of sufficient size to permit rapid draining and easy cleaning of tank; install same at a point 3 or 4-in. from tank bottom, to avoid clogging of drains. After emptying tank of solution, muck can be removed with shovels.

9) A mesh grid or shallow basket, placed on the bottom of the tank so it can be raised at any time, will make possible the easy recovery of dropped parts.

Rinsing Facilities

Adequate rinsing likewise is highly important. Materials selected for use in degreasing and cleaning before painting or finishing should be specifically designed for the particular job to be done. They should be readily and completely soluble so that they will become quickly diluted in the rinse water, and leave the metal clean.

Rinse tanks can be built of either wood or steel, with provision being made for a constant flow of clean water. Maximum rinsing effectiveness is promoted by the introduction of fresh water into the tank at a point near the bottom, through a perforated pipe, thus providing a steady movement of water to the top. As with cleaning tanks, rinse tanks should be equipped with an overflow dam to facilitate the removal of oil films as they form.

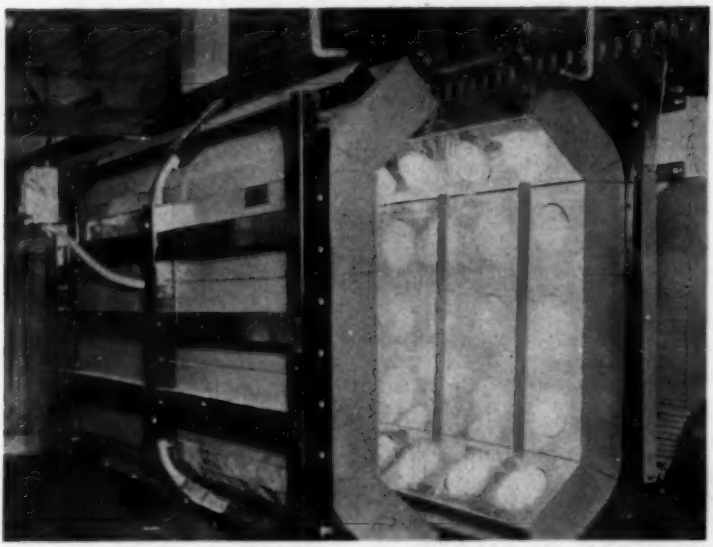
When taken from the final cleaning bath, the work should be immediately placed in the rinse tank and swished back and forth in clear rinse water to assure complete rinsing. Two rinse tanks are desirable wherever such a double-tank installation is feasible. In those cases where space will not permit this, a partition often may be constructed to separate one tank into two compartments. The first rinse performs the bulk of the rinsing; the second serves as a clear final rinse. The possibility of contamination in the second rinse is lessened to a considerable degree, thereby providing an additional safeguard against spoiled work. After all, the metal must be really clean before it is painted.

Spray rinsing is becoming increasingly popular. It is common in many automatic and semi-automatic installations. Where this method of rinsing is employed, it is essential that the spray rinse tank, unit or compartment be equipped with a sufficient number of nozzles so that work will receive the force of spraying from every angle. The continual use of fresh water, coupled with the mechanical action of the spray, assures speedy thorough rinsing.

Drying by Infra-Red

Following a brief explanation by the Editor, two letters are published, wherein writers comment on the article published in September issue, entitled, "Infra-Red vs. Convection Ovens for Drying Paint Coatings," by J. F. Gschwind, Development Eng'n'r.

MOST OF the manufacturers of products that are protectively coated with paint, varnish, lacquer or synthetics are interested in accelerated drying; in other words, drying at temperatures of 150° to 300° or 400° F. Drying rooms, tunnels and closed ovens heated by steam, gas, oil and electricity are used and have been used for many years for force drying coatings on a variety of parts and products. Drying by infra-red heating lamps has become an established practice of recognized value. Banks of infra-red drying lamps, sometimes set up to form tunnels of various shapes and sometimes arranged in other ways, including placement in the walls of ovens, are familiar to readers of INDUSTRIAL FINISHING. *(To p. 82)*



This infra-red drying tunnel is built up of interchangeable units which are mounted on portable adjustable stands and placed in alignment with an overhead chain conveyor. Photo, courtesy of The Fostoria Pressed Steel Corp.

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To draw out and present information about various types of ovens for paint drying, INDUSTRIAL FINISHING Magazine has published many articles on the subject, and will continue to do so. Of course, competition exists among manufacturers of paint-drying equipment, which is a very good condition because this makes for faster progress. Eventually every progressive firm and individual interested in the rapid drying of paint coatings will benefit by this honest progress.

Many Factors Enter into Successful Paint Drying

Naturally, all of the men in the business of engineering and supplying paint-drying equipment do not agree on all points; neither do those who use the equipment. When this publication presents one man's article or another man's comment on that article, or any other discussion on the subject, it doesn't mean that INDUSTRIAL FINISHING is "taking sides" either way. We believe that every type of modern drying system has merit. The main thing is to have it designed, installed, operated and maintained properly and in accordance with conditions in the plant where the paint drying job is to be done. Results depend largely upon the knowledge, experience, skill and thoroughness back of every engineering job.

In the belief that some of the comment on published articles may be of interest to readers, to the end that it will stimulate further investigation and thought, the following two letters are published in reference to Mr. J. F. Gschwind's illustrated article entitled: "Infra-Red vs. Convection Ovens for Drying Paint Coatings," which appeared in September 1945 issue of INDUSTRIAL FINISHING Magazine.

The first letter comes from Mr. C. W. McDaniel, Manager of Manufacturers Marketing Service, San Francisco, Calif., and is as follows:

SINCE our organization is active in the promotion and sale of equipment to operate the infra-red process industrially here on the Coast, attention has been called to the article, by J. F. Gschwind of Ross Engineering Corp., in September issue.

We have read the article quite carefully and we are glad to note that you take occasion to place responsibility directly on Mr. Gschwind. We can imagine that his article is going to cause quite a lot of trouble for those people who are making an honest attempt to apply infra-red radiant energy to industrial processes intelligently and in a practical manner. In our opinion the article can do no one any good, but it can do a lot of harm.

It so happens that the writer has been mixed up directly and indirectly with the installation of several thousand infra-red equipment installations. I am a salesman, not a "graduate" engineer, so I am always concerned about giving a customer a real run for his money. In these several thousand jobs there are some misapplications, but the bulk of them merit the praise which the users give them. When all the war production reports are in, it will be perfectly obvious that the infra-red process will rank high on the list of genuine contributions.

In this connection it is significant that the bulk of the installations — large ones particularly — are those employing open type reflectors and clear glass infra-red lamps. It is significant that, in most of the installations, these

USERS TELL US WE'VE DEVELOPED A

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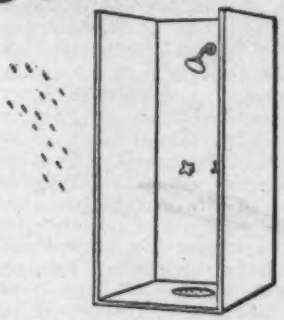

CHARACTERISTICS:

Applicable for pressed wood o. metal . . . Highly resistant to soap, alkali, heat and moisture . . . Long wearing (chip-proof and practically immune to scratches) . . . Excellent in color stability . . . Durable (provides maximum protection against rust, due to improved bonding qualities).

APPLICATION:

One-coat and two-coat systems are available. Finish is sprayed on.

BAKING TIME:

Pressed Wood: Primer, 20 minutes at 275°; finish, 20 minutes at 300° F. . . .

Metal: 20 minutes at 300° F. or 7 minutes with Infrared Drying.

(*Optional schedules are available.*)

Vedoc

All *Vedoc* finishes are developed for a specific use, then slightly varied to best fit each customer's production setup. For more information about these "better finishes", write . . .

LIQUID PLASTICS DIVISION
FERRO ENAMEL CORPORATION
CLEVELAND 5, OHIO

open reflectors are working out to the entire satisfaction of the user, are not tarnished, and are not mechanically frail.

All in all, Mr. Gschwind's article is so full of erroneous statements, it seems obvious that he has had very little experience in the application of infra-red energy to production processes. As a matter of fact, after reading the article a couple of times, we are inclined to the opinion that he has seen few, if any, infra-red installations.

There is room for improvement in equipment to operate the infra-red process industrially, just as exists in the case of every sort of production equipment. However, development will not be in the direction of "staggering" lamps nor the exclusive use of self-contained reflector lamps. For example, the lamp staggering "theory" has been knocked into a cocked hat in practical applications based on exhaustive laboratory tests. Moreover, it is definitely proven that material possessing high reflectivity for light rays is by no means the best for infra-red rays. And we are inclined to feel, after five years of experience in applying infra-red, that Mr. Gschwind's "guess" about the combination of radiation-convection methods of heat transfer is wishful thinking.

It looks to us as though Mr. Gschwind is in the position of trying to eat his cake and at the same time keep it. It seems apparent that he cannot drop his convection oven activities but, if this were possible, he would be an out-and-out radiation addict. Sometimes it's tough to go all the way in dropping the old to take on the new.

Here's hoping the engineering department of some infra-red equipment manufacturer decides to tear the article apart and write it over again including correct and up-to-date information—and that your publication will publish the revision.

* * *

The second letter, quite different from No. 1, is from Mr. Harry S. Walker, Manager of the Radiant Heat Division of C. M. Hall Lamp Co. (Designers and builders of infra-red radiant heating equipment), Detroit, Mich. It follows:

I WELCOME the opportunity to comment on Mr. J. F. Gschwind's article "Infra-Red vs. Convection Ovens for Drying Paint Coatings." Comments will also be made on Mr. C. W. McDaniel's letter to you.

In closing this interesting article, Mr. Gschwind's conclusions represent many of the basic facts anent infra-red upon which C. M. Hall Radiar equipment is designed, engineered and built. Quoting from Mr. Gschwind: "Infra-red radiation . . . is particularly suitable for rapid and intense heating. Infra-red, by its very nature, can be focused and concentrated upon painted surfaces of the work, producing excellent results by shortening heating cycles, permitting shorter ovens, and consequently, space savings and frequently lowering installation costs."

Mr. Gschwind further states that, "Theory and practice so far are definitely pointing toward combination infra-red and convection ovens which are totally enclosed and properly insulated".

In 1942, C. M. Hall, being one of the pioneer designers and builders of infra-red radiant heating equipment, became the first manufacturer of infra-red equipment to enclose the oven and utilize a recirculating and ventilating system. Thus valuable Btu's. of heat are exhausted from the top of the oven

MEMO *from* . . .

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Write Us for Recommendations

• We have materials for every conceivable surface application . . . formulated by experienced veterans in lab work, and factory tested, revealing characteristics needed to meet the most exacting requirements.

THE CLINTON COMPANY

1210 Elston Avenue

Chicago 22, Illinois

and returned to the bottom to be re-used as convected heat. In essence, we have been building combination infra-red and convection ovens for the past three years.

As to expressions anent Mr. McDaniel's letter, he states, "We can imagine that his (Mr. J. F. Gschwind's) article is going to cause quite a lot of trouble for those people who are making an honest attempt to apply infra-red radiant energy to industrial processes intelligently and in a practical manner." Being one of the pioneer designers and builders of such equipment and sincerely convinced that we always have and will continue to make honest attempts to build pre-eminent infra-red equipment, I fail to see how Mr. Gschwind's article can do us any harm, or any other reputable manufacturer of such equipment.

Mr. McDaniel further writes: "In this connection it is significant that the bulk of the installations — large ones particularly — are those employing open type reflectors and clear glass infra-red lamps." I most certainly question this . . .

With the advent of the self-contained reflector tungsten-filament R-40 lamp (as built by Wabash, Westinghouse and General Electric) the vast majority of our ovens, during the past three years, have been equipped with this highly efficient sealed beam lamp. This lamp has been one of the paramount contributions of the past several years to the industrial infra-red industry.

Again from Mr. McDaniel's letter, "and we are inclined to feel, after five years of experience in applying infra-red, that Mr. Gschwind's guess about the combination of radiation-convection methods of heat transfer is wishful thinking". Mr. Gschwind's guess is most definitely not a guess but factual information. C. M. Hall Radiar infra-red equipment has been designed and built for the past several years, using combination radiation-convection. Utilization of the convected heat through our recirculation system has resulted in a material increase in efficiency of the infra-red oven.

In summarizing, it is my considered opinion that Mr. Gschwind's article, based on factual data, represents considerable thought and research.

B. M. McDade Now Represents Acme White Lead & Color

Benjamin M. McDade has been appointed executive representative of Acme White Lead & Color Works, Detroit, Mich. Mr. McDade has a record of 43 years' activity as sales representative of the Sherwin-Williams Co., having served the railway and industrial trades for the greater part of that time in the Detroit area.

Mr. B. M. McDade is now executive representative for Acme White Lead & Color Works in the Detroit area.

The automotive and industrial product finishing activities of Acme and the Sherwin-Williams Co. have been pooled for the benefit of the accounts in the metropolitan Detroit area, with the Acme Detroit manufacturing facilities concentrating on the development and production of protective coatings for local industry.

Mr. McDade has been selected, because of his long experience and wide acquaintance with Detroit manufacturing executives, to acquaint the heads of the local industries with the facilities and services available.

INDIA

THE ELEPHANT NEVER FORGETS

... so go the fables about this largest of all beasts that roam in the dark jungles of India.

There's a parallel here with the fabled memory of paint housed in the head of an elephant ...

Remember this fabled force of the elephant head reflects the policy behind all India products. The manufacturers never forget their responsibility to the ... chasers of India ... to keep faith with this label, which ... full measure of quality ... to be worthy and a fair price.

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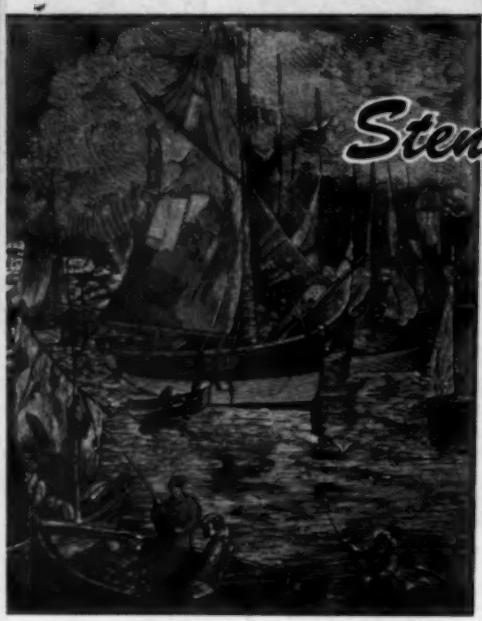

Stencil Screen Process

What it is; where, why and how it is used in industry, for a variety of new printing and color decorations.

By H. L. HIETT

"JUST like magic, such a beautiful design—and with only that frame contraption, that rubber and a table." This comment was voiced by a woman observer with a group of advertising men who were being escorted through a stencil-screen printery once operated by this writer.

As if drawn from a conjuror's hat, these few magic words—simplicity, economy, efficiency and flexibility, along with brilliancy and permanency in color if need be—explain clearly why stencil screen printing has been so enthusiastically proclaimed in recent years. Silk-screen stenciling is not only an excellent medium for the production of decorative art and advertising display presentation, but for the precision printing of dials, indicators, charts, etc., with various printing mediums including fluorescent and radium compounds. Also, it is useful for printing various designs on metals and glass, with brilliant everlasting fusable ceramic and viterous enamel colors; and for the printing of various textiles, including dress materials, with permanent dye and pigmented synthetics.

Concerns operating fleets of delivery cars or trucks find the process a rapid and economical means of applying their trade marks, names, addresses and business lettering in black, white or colors, directly to the sides of their vehicles.

Considering the screen process from another angle, it is also being used extensively for spotting glue and cement on paper, cardboard, cloth and plastic sheets. Also, for laying the sizing for silver and gold leaf gilding; for the laying of resists in design for quantity glass and metal etching (signs and name

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Finishes
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Through war years Egyptian's high standards steadily have been maintained, with production largely on finishes for war goods, of course.
Now as American industry swings back to production for peace, "quality" and "Egyptian" continue to be synonyms.
We invite inquiries regarding your finish needs, present and future.
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ROCKEFELLER CENTER, NEW YORK 20, N. Y.
EGYPTIAN FINISHES
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plates); and for the laying of adhesives or surface binders for the application of flocks, wood flour, glow beads, gloss tinsel, metallic flitters and smaltz.

Stencil screen printing is the only printing method, mechanical or otherwise, that is applicable to the printing of practically all types of smooth or semi-smooth surfaces

ILLUSTRATIONS SHOWING
The BASIC PRINCIPLES OF STENCIL SCREEN PRINTING
1
2
3
The MASTER SKETCH
THIS CAN BE MADE in PEN and INK, LEAD PENCIL, CRAYON or FULL COLOR, WASH DRAWING, ACTUAL PHOTOGRAPH or it can be A PRESS PRINTED PROOF.
The FRAME
THE FRAME LUMBER DRESSED FOUR SIDES can be of SUGAR PINE, WHITE PINE, MAHOGANY, BOX-WOOD or BUCKEYE
ATTACHING THE CLOTH
The MESH MATERIAL can be of GENUINE BOLTING CLOTH or TAFFETA WEAVE SILK in COARSE or FINE ACCORDING to MESH NUMBER and TYPE of STENCIL SCREEN to be MADE. ORGANDY VOILE, ORGANDY, or NUMBER 200, 250 or 300 STAINLESS STEEL WIRE GAUZE can also be used
4
5
6
SWINGING ARM SUPPORT
REGISTER GUIDES
RUBBER BLADE 1/16" THICK BY 2" WIDE, LENGTH TO SUIT
The SCREEN PRINTING PLATE
The IMAGE or DESIGN CAN BE APPLIED to the SCREEN by VARIOUS METHODS and MATERIALS INCLUDING DIRECT and TRANSFER PHOTOGRAPHIC and HAND-CUT FILMS, PAPERS, EMULSIONS ETC.
PRINTING UNIT and SET-UP
THE PRINTING BASE CAN BE A MOVABLE ONE LIKE PICTURED ABOVE or IT CAN BE A TABLE TOP. THE BASE CAN BE A REGULAR DRAWING BOARD. IT CAN BE CONSTRUCTED OF PLYWOOD, MASONITE OR METAL.
The SQUEEGEE
THE WOOD HANDLE can BE MADE in VARIOUS SHAPES to FIT the HANDS. The RUBBER BLADE can BE PURE, COMPOSITION, or SYNTHETIC.
7
8
PIN HINGES
RACKING
AS THE MATERIAL or OBJECTS ARE BEING PRINTED THEY ARE PLACED UPON RACKS OF VARIOUS KINDS FOR DRYING.
SLAT RACKS
PRINTING
THE SCREEN IS ELEVATED the MATERIAL to be PRINTED is PLACED AGAINST the REGISTER GUIDES on the BASE. the SCREEN is LOWERED, the PRINTING COLOR is DRAWN OVER THE INSIDE of the SCREEN with the SQUEEGEE, the SCREEN is AGAIN ELEVATED the PRINT REMOVED, ANOTHER BLANK INSERTED and the OPERATIONS AGAIN REPEATED.
TRUCK with BALL BEARING PLATE CASTERS

~~AD INTERIM~~ *Availability*

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-7
-7
-7

• The Watson-Standard laboratories are ready to assist in supplying you with a protective coating formulated from available materials for your specific coating requirements.

A number of critical chemicals needed by our armed forces to continue the prosecution of the war are now available for the production of top quality protective coatings, in this immediate post war period.

Your requests for detailed information will be given our prompt attention.

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Manufacturers of
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INDUSTRIAL FINISHES
AND LITHOGRAPH COATINGS

and textures, including crinkle finishes, with a great range of color mediums — water, oil, synthetic enamels, lacquers and fusable ceramics.

What Factors Enter into Real Stencil Screen Work

Stencil screen work offers so much for so little in terms of costs, experience, tools and equipment. There is no other printing method in which skill can achieve so much with so little, and in faster time. When letter-press, planographic (lithograph), or gravure processes are mentioned we immediately associate the process with purely mechanical means, even in the case of linoleum block or rubber plate printing, instead of thinking of them in terms of skill on the part of the craftsman.

Successful screen process work depends upon the combined skill and accomplishments of different groups of workers. First there is the artist who prepared the original or master sketch; then the stencil screen plate maker, and finally the workers who prepare the surface, position and hold the framed screen, and force the paint through the stencil by properly handling the squeegee. The quality of the finished reproduction is in direct proportion to the degree of skill and artistic feeling in their efforts.

All printing, whether it be letterpress, planographic or gravure, as everyone knows, is of an external nature, printing directly from one surface to another. In this respect, stencil screen printing is completely different in principle by comparison, as it is of an internal nature rather than external. The actual printing is carried on from inside the printing plate and directly through and onto the surface being printed. This may be a rather enthusiastic definition for a medium so closely related to the common stencil, which has been in use through the centuries, from the times of the early Egyptians, Etruscans and Chinese, right up to the present.

With the modern adoption of the stencil screen printing system, there isn't a design technique produced by any of the other graphic arts printing processes that cannot be produced by this method, with likewise metal-engraved-plate accuracy and sharpness—from fine color separation halftone printing, with transparent colors to lines of text barely readable with the naked eye; from multi-colored poster technique, even for 24-sheet billboard posters, to the technique of the finest etchings.

Intelligent Planning, Plus Skilful Workmanship

In all its ramifications stencil screen printing is a matter of intelligent planning and assembly, just the same as with any other form of printing reproduction work. It makes no difference whether the work of the skilled and experienced craftsman is carried on from start to finish in the cramped basement of one's home, or in an alley shop, or in a well-equipped modern factory. The final results can be the same, regardless of how much money is spent on equipment. This is what makes the art such an attractive, fascinating and popular medium of reproduction.

Today, with all its varied and deversified uses, it is doubtful indeed if anyone can correctly estimate the number of manufacturers, concerns and industries who are using this process in one form or another, or the countless num-

Flash!

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is now
AVAILABLE

We are happy to announce to old and new friends that America's No. 1 Wrinkle Finish is released for all uses.

RINKOLIN is the fool-proof wrinkle finish which needs no special handling to get uniform results.—RINKOLIN always comes out with the same uniform texture and sheen.

SINCE 1870

STANDARD VARNISH WORKS

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Chicago, Illinois

A HYDRO-WHIR

inside cross-
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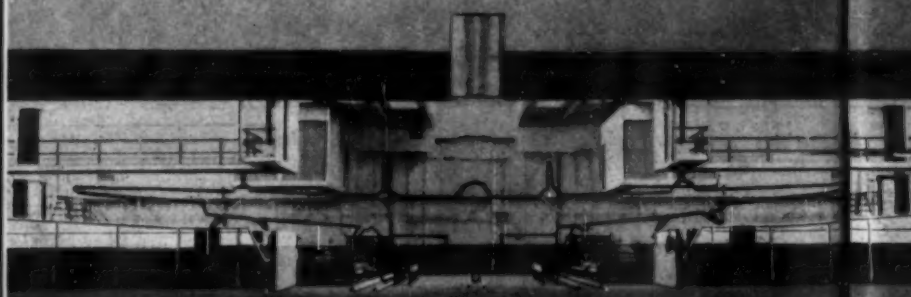
A basement view showing one of four batteries of "Hydro-Whirl" water wash chambers. Note grating above, where the paint fumes were exhausted down through and into the water chamber.

A front view of the Camouflage Spray Booth. Notice the mammoth lift-ers which lowered, both sides, when Bomber was in position for painting.



PETERSON

HYDRO-WHIRL DUST COLLECTORS AND SPRAY BOOTHS

17916 RYAN ROAD • ETR

RL Achievement-

WE, TOO, CAN

"Tell it NOW"!

The

WORLD'S LARGEST SPRAY BOOTH—

Installed and operated, together with other Processing Systems in the great

WILLOW RUN BOMBER PLANT

Incorporated

• ETROIT 12, MICHIGAN

INDUSTRIAL OVENS, WASHERS AND VENTILATING SYSTEMS

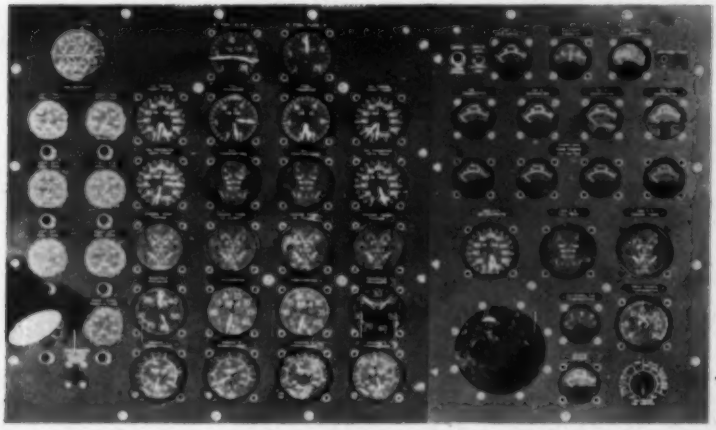
ber of products or items being decorated or marked by this process. The products stenciled include toys, games, skooters, wagons, sleds, elaborate games of chance, chests, cabinets, display racks and stands; various types of decalcomania, greeting cards, calendars, embossed book covers and wallpaper; bottles, jars, cigarette boxes and ladies' purses and compact cases; flags, pennants, advertising change mats, laundry bags, shoe bags and office machine covers; ladies' fancy scarfs, handkerchiefs, dress materials and upholstery furnishings; lawn and porch seat covers, bath room curtains, umbrella coverings, luncheon sets and table cloths, not to mention all types of signs.

When all of the foregoing products are considered, it is little wonder that technical information on the subject is so eagerly sought—and it will increase as postwar activity is stepped up.

How and Where Screen Process Printing Originated

Like the lady observer mentioned at the beginning of this article, many people have heard about the screen process but they do not know exactly how it is accomplished. The process originated in this country. It was first used by a small souvenir pennant manufacturer in a mid-eastern city in which the writer lived. This pennant maker was dissatisfied with the ordinary open-cut oiled-paper stencil, which left a blank tie space in portions of his printed designs and lettering. His first practical experiments included the use of a tightly stretched piece of coarsely woven cheesecloth upon a flat board, tacked down at the edges over a cut-out shellaced paper stencil in which all ties were eliminated.

The cheesecloth was then ironed with a medium warm iron, thus melting the shellac and causing



Screen stencils are excellent for accurately and clearly printing dial markings on all kinds of instrument faces and panels. They produce clean clear-cut fine-line printing, although the above illustration does not show these results as well as the original photograph from which this cut was made.

Remember Pearl Essence for

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MEARLMAID Pearl Essence is being used on hundreds of different products to produce a decorative and attractive effect.

Investigate the numerous advantages of a Mearlmaid Finish before you select the final coating. Its sales appeal and merchandising value are important.

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the stencil to become vulcanized to the cloth. Then the stencil screen was cut to the desired size from the board. The actual printing on felt pennant material was accomplished by forcing white lead oil color through the mesh openings of the stencil with a piece of heavy cardboard or a sharp-edged wooden paddle. Later he improved his process by tacking the cheesecloth to a wooden frame and attaching the cut stencil afterward. He fastened hinges at one end of the stencil frame to produce a sort of mechanical action which speeded up his pennant printing.

Screen Process Work Has Become Highly Developed

Looking back over the development of stencil screen printing art probably no one realized then that this pennant maker's innovation would eventually reach the stage of universal adoption by so many different manufacturers for such a variety of fine quality production work.

Developments and changes have been many. Today there are different types of automatic stencil screen printing presses, some of which print as many as 1,200 impressions an hour. Various types of automatic bottle and jar printing machines, print up to 800 an hour.

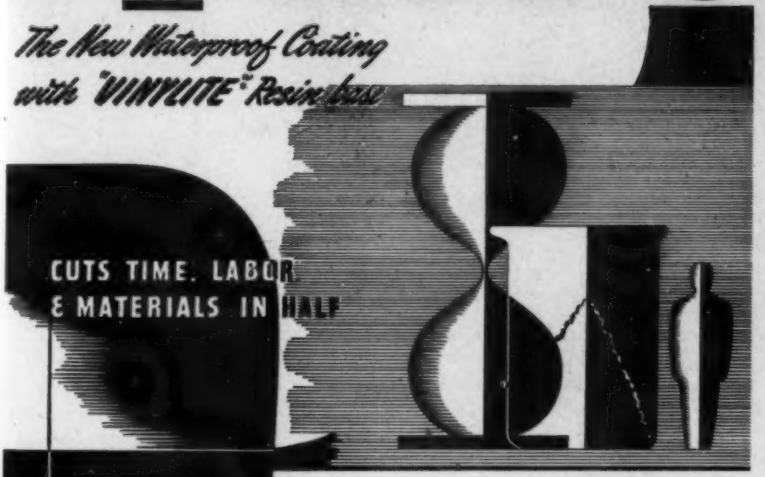
Laying "resist" for acid-etched name plates, arranged in convenient multiples.

In the years to follow, it was discovered that bolting cloth, a material used for bolting flour in the flour milling industry, was ideally suited for the process because of its increased resiliency and tensile strength in comparison to the previously used cheesecloth. Further, he discovered that the ordinary window squeegee, because of its flexibility, gave a better printed impression when used to force the color through a screen stencil.

A great number of different methods are employed in the making of stencil screen plates, including 12 photographic processes. Several paint and color manufacturers are in position to supply process colors especially for stencil screen use. Included among these products are the rich lus-

FUZON-O

The New Waterproof Coating with "VINYLITE" Resin base



Coatings based on "Vinylite" resin LOOK different . . . ACT different . . . ARE different. FUZON-O, the amazing new "Vinylite" resin base formulation, resists oil, grease, alkali and acid . . . withstands oxidation . . . is exceptionally immune to moisture, abrasion and temperature. Use FUZON-O on cotton, nylon, glass fabrics . . . and many other materials. Learn more about FUZON-O.

Write for booklet to the Stanley Chemical Company . . . manufacturers of Stanley Lacquers, Enamels, Synthetics and Japans . . . East Berlin, Connecticut.

*Trade Mark Carbide and Carbon Chemicals Corporation

Stanley Chemical

trous baking and air-drying enamels for use on wood, metal, plastics and cardboard; transparent colors and bases for superimposing three colors and getting a combination of from six to ten colors in the completed reproduction; fast-drying flat colors for cardboard and paper printing; stencil screen lacquers for decalcomania and metal printing; screen process water colors for commercial school and home work in which the toxic effects of oil and lacquer colors are eliminated. There is also available a new type of sun-fast screen process textile dye which can be used successfully by both large and small operators, without special equipment.

Supplies, Materials, Equipment Now Furnished by Several Firms

There are firms manufacturing and supplying the fast growing industry with specially designed tools, hardware and equipment, various mesh or screen materials including stainless steel wire gauze, specially constructed cutting films, photographic films and emulsions, squeegees, screen fillers, etc.

There are also concerns specializing in making of the various types of stencil screen plates from the durable celluloid knife-cut to the finer photographic. These concerns are to the stencil screen printing industry what the photo engraver is to the graphic arts industry.

Much of the screen stencil work, in the finer sense, requires some technical skill, practice and experience, especially in the making of the more practical and finer photographic stencil screen plates; also, the preparation of the plates requiring specially made frames for printing upon curved surfaces, in recesses, etc. The less experienced workers may be confronted with various problems and complications which present themselves in one form or another, from the making of the simplest form of stencil screen plate down to the actual printing and color mixing.

In production, there should be no interference if maximum efficiency is to be maintained. This depends mainly upon the durability of the stencil screen plate, as well as the consistency of the print or color used. In some cases if clogging of paint in the screen is apparent the paint must be treated with retarders. When coordination of all factors involved is in effect, as many as 25,000 impressions can be made from a single stencil screen plate.

I was one of those early pennant printers and was among the first to adopt the method for printing upon materials other than felt. Many of the present-day developments can be attributed to my experiences and efforts, which date back to 1908. In 1913 I devised the first practical photographic stencil screen, and of the twelve later photographic processes, seven of these were created by me. In 1914 I wrote the first treatise on the subject for a magazine, and I was the first to write and publish a complete book about screen stencil work. Since the publication of that first book in 1920, I have written several others which are well known to the industry.

James Berry Joins Tanner Chemical Co.

James Berry, veteran General Motors sales executive, has been appointed Vice President and Treasurer of the Tanner Chemical Co., Ferndale, Mich. Mr. Berry will direct sales for the Tanner company, which produces "Tannerite", a rustproof coating for metal surfaces.

In the rush to produce civilian goods, make haste safely and confidently with a Pratt & Lambert paint, varnish or lacquer.

PRATT & LAMBERT-INC.
Industrial Finishes
NEW YORK BUFFALO CHICAGO
FORT ERIE, ONT.

Letters from Readers

Who Manufactures Pressed Steel Sinks?

If I recall correctly, I believe I saw an article in INDUSTRIAL FINISHING, covering the finishing of pressed-steel kitchen sinks. We are interested in locating a manufacturer of this item—one who can furnish us with stamped or pressed steel, enameled finish, and stamped or pressed stainless steel kitchen sinks. We would appreciate it if you could furnish us with sources of supply for this commodity.—INDUSTRIAL IRON & STEEL PRODUCTS CO., BROOKLYN, N. Y.

Can some reader recommend a concern that might be interested?—ED.

Micalith-G Metal Primer

We are interested in obtaining a quart sample of your Micalith-G slate gray metal primer, as noted on page 136 of the September 1945 issue of INDUSTRIAL FINISHING Magazine. It would be appreciated if you would forward any additional information which you have available, such as the proper spray reduction and type of solvent used for reduction purposes.—H. C. R., Materials and Process Engineering.

We are referring your letter to the manufacturer of this product, The Glidden Co., Cleveland 2, Ohio.—ED.

Information on Flock Finishing

I note in the June issue of INDUSTRIAL FINISHING that there was a feature article on flock finishing in your October 1944 issue. We have done a small amount of this work in the past, and are again in our peacetime business of display work, and expect to do more of it. In order to set up new training and new departments, we will appreciate getting any working information which the article mentioned, or any other you might supply. If it is possible, we wuold like to get a reprint on this article.—K. C. Co.

In your October 1944 issue, you have an article dealing with flock finishing. I would appreciate either a copy of this issue or tear sheets covering the article.—F. W.

Reprints of this article are exhausted, but tear sheets from a mutilated copy are being sent.—ED.

Graining Equiment

We want to go into the manufacture of bedroom furniture, along with our other work in living room suites, and would appreciate your sending us some information on where we can find a printing machine for the pattern printing of cheap bedroom suites. Also, send us all of the available information on same, and where we can locate one. Up to the present time, all of the finishing that we have to do has been just straight finishing, but now we would like to have this pattern print.—P. F. Co.

See the graining equipment advertisement in this issue.—ED.

Glass Resists Acid

It has been brought to my attention that you ran an item on a new type of glassware or plastic that is resistant to attack from hydrofluoric acid. (Item appeared on page 148 of June 1945 issue.) If you could send us the name of the manufacturer and his address, we would appreciate it.—K. P. Co.

It's American Optical Co., 1940 Thomas St., Southbridge, Mass.—ED.

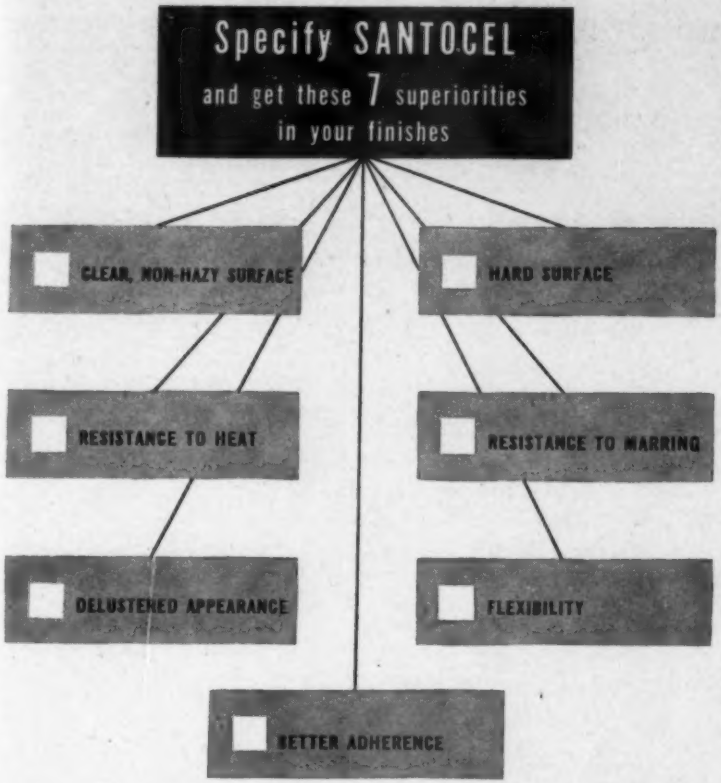
To Harden Soft Wood

The writer is anxious to know if you can tell us of some type of material used for impregnating soft wood to achieve the effect and wearing qualities of hardwood.—F. ELEC. CO.

Read the article on page 118 of October 1945 issue.—ED.

Can Supply Conveyors

In the last two issues of your magazine, we noticed letters from readers inquiring about conveyors. Since we are manufacturers of light



Just one flatting agent, Santocel,* Monsanto's unique silica aerogel, gives you all of these advantages . . . for all types of lacquers, synthetic resin and oleoresinous varnishes.

With wartime restrictions lifted, Santocel is now available to all users. Inquire now about adapting Santocel for your flatting agent needs. MONSANTO CHEMICAL COMPANY, Merrimac Division, Everett Station, Boston 49, Mass.

*Reg. U. S. Pat. Off.

MONSANTO CHEMICALS

weight conveyors, we wish to be listed with your company for future references. On page two of our catalog, you will find our conveyors briefly described.

In addition to overhead conveyors, we specialize in Dual Strand, Straight Line, wire-mesh belt and stainless-steel belt conveyors.

We have been manufacturing overhead conveyors for the past five years with great success. The drive unit consists of motor, reducer and timer which allows for variable speed.

The "T" beam rail is easily mounted. The trolleys can be seen at all times and require very little oil. The chain is combination malleable iron with steel links and pins, and never requires oiling.—JENSEN SPECIALTIES.

Toy Finishing

Your April and May issues of INDUSTRIAL FINISHING Magazine hold some interesting notes on the spraying of toys. We would greatly appreciate your sending these two copies to us if they are available. We have a contract on toy spraying and, although it is not new to us, we would appreciate all the extra knowledge we can get on the subject.—A. PAINTERS.

Finishing Small Articles

While our business does not normally involve finishing problems, we have one isolated problem wherein we are interested in setting up to lacquer spray and dry both sides of small, button-shaped items, approximately 1¼-in. in diameter by ¼-in. thick, at the rate of some 15,000 to 20,000 pieces per hour. Perhaps in your library of articles on finishing you may have some article or articles devoted to such finishing problems. If so, we would like to obtain copies of such articles.—L. J. Co.

Spray Booths

Can you furnish me with a list of companies that specialize in making spray booths for finishing departments?—H. T.

Look over the advertising pages of any issue of this magazine.—ED.

Tumbling Barrels

How extensive are tumbling barrels used in industrial plants for polishing processes? One of our clients has developed a new tumbling barrel and desires to learn of any market beyond that indicated in the first question above. The tumbling barrel now made goes to one other manufacturer who distributes it to firms making wire hooks, stampings, punchings, etc. To go beyond that one market is our aim, as there must be other uses for tumbling barrels.—R. B. C.

Judging from the many inquiries we receive for tumbling, they must be used in considerable numbers for coating or finishing small wooden handles, knobs, turnings, etc.; also for coating (with paint) small metal castings.—ED.

Peel-off Plastic Coating

It is our understanding that in a recent issue of INDUSTRIAL FINISHING, there appeared an article by T. A. Dickinson, regarding a new plastic coating. This is a subject in which we are extremely interested, and we will appreciate it if you can give us the name and address of the concern manufacturing this product. Also, if available, we will appreciate your sending us the copy of INDUSTRIAL FINISHING which contained this article.—W. F. Co.

Article appeared in June issue, pages 74 and 78, and a copy is being sent you. The number of manufacturers making this and similar coatings is too large to be published here, therefore we are sending you the information in a letter.—ED.

Hand Roller Coaters

Could you please give us the names of two or three manufacturers of numeral coaters. These coaters are used in numeral coating of embossed lettering on steel traffic signs, such as used on state highways.—I. S. P.

There are several. One supplier we think of at the moment is Finishine Laboratories, whose advertisement appears in this magazine. (Readers, please tell us the names of others, for future reference.)—ED.

For Tank Coating

Can you help us on this inquiry which was received through the gratis Research Advisory Service? It comes from a manufacturer located in the Pittsburgh, Penna. area, and is specifically stated as follows:

"We have a tank in which we want to treat vegetable oil which contains a mixer. This oil will be treated by the addition of caustic soda solution and sulphuric acid and will be worked at a temperature not exceeding 215° F. We would like to know if there

NON-BLEEDING • NON-GRAIN-RAISING • COLOR-TRUE

CHADELOID STAINS

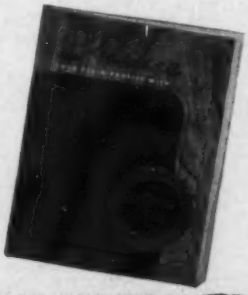
★ CERTIFIED ★

EXTRA PROFITS = FOR STAIN MANUFACTURERS

It is the Seal of Quality of the Chadeloid Corporation . . . patentees and licensors of Chadeloid color-true, non-grain-raising stains . . . today's outstanding development in wood finishing, now being manufactured and sold by this group of progressive licensees:

Adams & Elting Company
Advance Paint Company
American Paint Works
Atlantic Lacquer Mfg. Co.
Atlas Powder Company
Ault & Wiborg,
Div. Interchem. Corp.
Bigelow Varnish Company
Billings-Chapin Company
T. L. Blood & Company
Boston Varnish Company
Andrew Brown Co., Inc.
A. C. Buschman & Company
Campbell Paint & Varnish Co.
Carasol Chemical Company
Carpenter-Morton Company
Chicago Bronze & Color Works
Clover Leaf Paint & Varnish Co.
The H. B. Davis Company
Flood & Conklin Company
Forest City Paint & Varnish Co.
The Fay Paint Company
W. P. Fuller & Company
The Glidden Company
C. W. Haynes Laboratories, Inc.
Heath & Milligan Mfg. Company
Heath & Milligan Mfg. Co. (Cal.)
A. C. Horn Co., Inc.
Indie Paint & Lacquer Company
Maas & Waldstein Company
Murphy Finishes Corp.
Murphy Paint Company, Ltd.
Newark Varnish Works
N. Y. Woodfinishers' Supp. Co., Inc.
Nubian Paint & Varnish Company
Palmer-Price Company
Penfound Varnish Co., Ltd.
Perfection Paint & Color Co.
Rockford Varnish Company
Carlos R. Rossi
Rosalin Flexible Finishes, Inc.
Schaefer Varnish Company
Scriver & Quinn, Inc.
The E. J. Shannon Company
R. H. Thorpe Paint Company
Trojan Lacquer Company
Twin City Varnish Company
U. S. Lacquer & Chemical Co.
L. R. Van Allen Company
Wabash Products Company
The A. Wilhelm Company
John H. Witte & Sons
Woodfinishing Products Co.
Zapon Division, Atlas Powder Co.

Other paint and varnish manufacturers are invited to write for a copy of "Insure . . ." which explains the benefits of our research laboratory, merchandising helps, and technical data service.



CHADELOID CORPORATION

308 W. FIRST ST. • DAYTON 2, OHIO

Patentees and Licensors

U. S. PATENTS — 1,877,748 — 1,898,247 — 1,930,768 — 1,977,345
2,000,120 — 2,000,121 — 2,093,424 — 2,105,984 — 2,161,503

is any coating that we could easily apply to the inside of this tank and the agitator."

Your comments and suggestions will be appreciated.—R. A. S.

We suggest that your client contact Inertol Co., Inc., 470 Frelinhuysen Ave., Newark 5, N. J. There may be others, but we haven't a record of it at the moment. Can some reader suggest other sources for such coating material?—ED.

Can Supply "Trick Finishes"

Our laboratory has recently developed something new in the line of "Trick Finishes". We would appreciate it if you would send us the name and address of the W. E. Co., whose inquiry regarding this matter was published on page 92 of the Sept. issue of INDUSTRIAL FINISHING.—SINCLAIR & VALENTINE CO.

Information supplied.—ED.

Conveyorized Cleaning-Finishing-Drying System Wanted

Could you refer us to a manufacturer or an engineer who can give us figures on an infra-red oven, light weight conveyor, and metal cleaning system or process. We manufacture classroom chairs, desks and other equipment for schools. Our product is light in weight.—A. DESK CO.

In a letter we are submitting names of several concerns and individuals. —ED.

Custom Dip Tanks

We are interested in purchasing two steel dip tanks for paint. Would you be good enough to suggest the names of two or three sources of supply to whom we can send out prints? We will be very grateful for this friendly cooperation on your part.—STARLINE INC. (in Illinois).

Offhand we suggest Engineering Metal Products Corp., 401 S. Harding St., Indianapolis 3, Ind.—ED.

Sizing or Sealer Coat for Plywood

Kindly advise us if there is obtainable a preparation for sizing plywood before being sanded. We are now using a glue sizing method by hand and are very desirous of adapting automatic spraying equipment for small parts finishing, to spray our plywood panels in the same manner and to take the place of the hand glue sizing in use now. Will appreciate hearing your comments or advice on this subject. —N. C.

We suggest a thin "wash-coat" of shellac, imitation shellac or lacquer sealer. For materials and spray equipment, contact manufacturers whose advertisements appear in this magazine.—ED.

Masks for Spraying

I am wondering if you could advise me who in the states of Illinois and Indiana manufactures masks for spraying enamels. The mask I mean is one to cover up one color while we spray on the other color.—A. E. CO.

Two or three manufacturers of masking tape advertise in this magazine—and they have representatives in Chicago.—ED.

Hydrholac Finishes

Would you kindly send me a list of names of makers of Hydrholac finishes?—D. M.

This name "Hydrholac" is the trade name of lacquer emulsions used in leather finishing, the product being manufactured by Rohm & Haas Co., Washington Square, Philadelphia 5, Penna. We do not know the names of any other concerns manufacturing such a material.

Can some reader add anything to the above?—ED.

Paint for Metal Awnings

On page 96 of Oct. 1945, issue, we notice the letter from L. M. Co. regarding the painting of metal awnings. We have had a lot of experience in furnishing materials for these permanent metal awnings, and would appreciate it if you would give us the name and address of L. M. Co., so that we can communicate with them directly.—RELIANCE VARNISH CO.

Information supplied.—ED.

Filters to Catch Spray Exhaust

In the July 1945 issue of INDUSTRIAL FINISHING there is an article on page 12 entitled, "Mist From Spray Booths", in which the I. Heater Co. tells of their problem in eliminating spray mist from the exhaust fan of a paint booth. Your answer to their query

Is there something missing in the dress of your product?

A product may have good design, good construction, good materials and still lack the one feature that puts the sale over . . . a good finish!

Your product is worthy of the best eye-appealing finish you can give it . . . furthermore, to dress your product in better style does not necessarily mean a more expensive finish than you are now using.

Why not investigate our Creative Studio Service . . . let us study your problem and make recommendations. There is no charge or obligation for this service to reputable firms.

No Tampering with Quality

ROCKFORD VARNISH *Company*
ROCKFORD, ILLINOIS

Manufacturers of Protective and Decorative Coatings

is that you are sending them the name of a company that manufactures filters for installation in spray booths. Said filters are supposed to catch and retain the particles of paint in exhaust spray mist. We would be very grateful if you would send us the name and address of the company that manufactures these air filters.—E. T. Co.

It's American Air Filter Co., 413 Central Ave., Louisville 8, Ky.—ED.

Identification Colors for Service Pipes

Sometime ago we read an article giving definite colors for plant piping, to be painted to indicate the types of materials they hold. We would appreciate a copy of this article, or any information available on standards set up for this type of coding of piping, with different colored paints.—P. S. Co.

The article appeared in February 1945 issue of I. F., page 92. Colors are as follows:

Red.....Fire Fighting Equipment
Yellow.....Gas or Dangerous Materials
Blue....Steam or Water Exhaust and Protective Materials
Green.....Air Lines and Safe Products
Purple.....Extra Valuable Materials

Roller Coating Machines

It will be appreciated if you can furnish us the names of manufacturers of roller-coat painting equipment, similar to that used by the lithograph companies for coating metal. — C. VENETIAN BLIND CO.

Will you kindly furnish the writer with names of manufacturers who are making paint roller-coating machines? Our interest is in a machine suitable to coat one-inch wood strips.—U. G. S.

Could you furnish me with the names of manufacturers of roller coating equipment suitable for coating small panels, cut-outs, etc., made from Masonite, and not over 12-in. wide? Many would be 3 to 5-in. wide. Any information you can give me will be very much appreciated.—G. S.

Try the following:
Naz-Dar Co., Chicago 10, Ill.
Black Bros. Co., Inc., Mendota, Ill.
Hosdreg Industries, Huntington, Ind.

Tumbling Finishes for Wood

Can you refer us to a source of supply for finishing materials used in finishing wood knobs and pulls of maple bedroom furniture, by the tumbling process? We make a low-priced line and would like to stain and coat the pieces in one operation. We have installed a large wooden tumbler 38x38-in. which turns at a speed of 7-r.p.m.—C. FURN. CO.

We believe your speed is too slow; usual speed is 25 to 40-r.p.m.

Look through the advertising pages of INDUSTRIAL FINISHING and try any of the manufacturers of wood finishing materials.—ED.

Graining Plates

For some time I have been trying to locate the manufacturer of graining plates and rollers. In your July 1945 issue there is an article by J. C. Livingston on this type of graining, and I am wondering if you could give me the name of a company that has the etched copper plates that he mentions. As I have always done hand graining, I would appreciate any other information which you think would aid me in the plate method of graining. —REDWOOD FINISHING CO.

For graining plates and rollers, we refer you to the Graining Plate Division of the American Richwood Products Co., 104 E. Mason St., Milwaukee, Wisc.—ED.

Striping Tools

Can you suggest manufacturers who can provide us with equipment for painting stripes by methods other than masking?—W. & S. Co.

We suggest you try the following:
K. H. Gettner Shop, Detroit, Mich.
Wendell Mfg. Co., Chicago, Ill.
Beugler Mfg. Co., Los Angeles 4, Calif.

Furniture Finish Repair Kit

In the August 1945 issue of INDUSTRIAL FINISHING, page 120, we noticed the item under Furniture Repair Kit, as listed in the book entitled, "Furniture, Furniture Finishing and Patching", by Pattou and Vaughn. We would also like to know where we can obtain this kit and also the approximate cost.—H. C. Co.

Try one or both of the following:
Finishine Laboratories, Syracuse, N. Y.
H. Behlen & Bro., New York 14, N. Y.

EDITOR'S NOTE: These are only a few of the letters of inquiry from readers. All of them have been answered by letter. A few are published here to reveal trends of thought in industries served by INDUSTRIAL FINISHING Magazine.

FUNCTIONAL

Used in airplane, auto and numerous other industries for—

SOUND DEADENING • TEMPERATURE INSULATION • INTEGRAL GASKETS • SHOCK ABSORBING SURFACE • NON-MAR SURFACE PROTECTION.

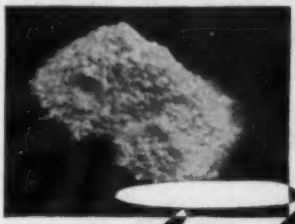
DECORATIVE

Applied in various lengths and colors to wood, paper, cloth, metal, etc., the following effects are produced—

SUEDE LEATHER • FURNITURE UPHOLSTERY FABRICS • AIRPLANE AND AUTO UPHOLSTERY FABRICS • VELVET • VELOUR • MOHAIR.

Check this List of industrial uses for

FLOCK



RAYCO *Flock*

The surface coating of 1,000 uses

Rayco Flock consists of textile particles controlled in manufacture to produce various types of surfaces when adhered to paper, metal, wood, glass, plastic, cloth, cardboard, etc.

The above list is merely suggestive—new uses are found every month. Endless variety of colors, wide range of textures: suede leather, felt, velvet, velour, etc. Ample sample gladly sent.

RAYON PROCESSING CO. of R.I. INC.

55 TREMONT ST., CENTRAL FALLS, RHODE ISLAND

Developers and Manufacturers of Printing and Coating Flock

Questions and Answers

Naphtha Causes Skin Trouble

Referring to articles I have read about the rash that breaks out on people working with wiping stains and rubbing oil, I have had these experiences with men under my supervision.

In many finishing rooms the factory management and finishing foremen have complaints from men and women who develop skin rash. This condition occurs only when the employees are given jobs such as dipping furniture in oil stains, wiping stains, blending stains, uniforming stains, or in the use of rubbing oil. These materials are purchased heavy in body and reduced in the factories with naphtha or some other solvent.

Regardless whether this material is dipped, sprayed or brushed on, some workers are allergic to the solvents mixed in the material. The most common trouble maker is naphtha.

I recall two cases of skin eruptions in my department, a few years ago. A husky young man was dipping chairs in a wiping stain tank. After the stained chairs had set for a few minutes he wiped and brushed them. After three days he came to me and said that he was breaking out all over his body. He was sent to a doctor who, in turn called me and asked for a sample of the stain. In a test case the doctor found that the naphtha had caused all of the trouble. Six weeks elapsed before this man got well. The second case was a man in the rubbing room. He also was allergic to naphtha —the naphtha in our rubbing oil.

The doctor advised that these were allergies for which nothing could be done. The only cure is to give these people jobs where they do not come in contact with the cause of their infections.—W. C. ANDERSON.

Screen Process Developments

Editor's Note — Supplementing Harry L. Hiett's reply to the question of L. E. Goldsmith, as published on pages 110 and 112 of October 1945 issue, the following comes from Bert Zahn of Graphic Arts Division of The Sherwin-Williams Co.:

1) On the process developments which were mentioned, we referred to automatic equipment which is being built here to fully mechanize this industry.

2) The dyes mentioned are our regular textile dyes known under the trade name of Sher-Dye. They are of silk screening consistency, and after being applied to the fabric are set with a hot flat iron.

3) The photographic system mentioned is the new Craftint presensitized sheet; a circular describing same is being sent to you.

4) The hot dyes you mention are not part of our program.

5) Motor - driven squeegees. There have been a number of automatic process machines with

BAKING ENAMELS
LACQUERS
ENAMELS
SEALERS
PRIMERS

NEW PERIOD
WOOD and METAL
FINISHES

SYNTHETICS
VARNISHES
SHELLAC
FILLERS
STAINS
SUPPLIES

No. 282 LACQUER SEALER

A brand new formulation—high solids Lacquer Sealer that sands in one hour. Economical to use—geared for fast production schedules. Order a five gallon test sample at drum price for your production line.

NEW PERIOD LACQUERS

A complete line of superior gloss, semi-gloss, clear and pigmented lacquers. Many satisfied users of NEW PERIOD Lacquers give them their stamp of approval. A production sample will be sent upon receipt of your specifications.

NEW PERIOD PRODUCTION FINISHES

NEW YORK WOODFINISHERS SUPPLY CO., INC.
109 IMLAY STREET BROOKLYN, N. Y.
Established 1917

automatic squeegees on the market, but the only one we know of here in the states is the Shelburne Printer, made by the Shelbourne Mfg. Co., at Hannibal, Mo.

6) As for adhesives and glues that can be screened, our regular Kem Silk Screen Adhesive and Victory Silk Screen Adhesive are used primarily as an adhesive for flock, beads, sawdust, metallics, etc. The glues are the heavy-bodied vegetable-type glues, and are on the regular market in this country.

7) The metal mesh which was referred to is a phosphor wire bronze with approximately 400 to 500 meshes to the inch. We have been unable to get it during the war, but we look for it to return in the near future. The source of supply for that material is the Cleveland Wire Cloth & Mfg. Co., 3573 E. 78th St., Cleveland, Ohio.

Coating for Concrete Spray Booth Floor

We expect to move into a new factory in the near future. The spray booths in this factory will have cement floors and a certain amount of the lacquer material will collect on the floor, so I would appreciate it if you could send me some information on how to keep these floors clean and in good condition.—N. & S.

If the concrete floor is smoothly troweled, you will need no treatment; the lacquer can be scraped off easily. If the concrete floor is not smooth, we suggest that you apply one or two applications of thinned oil. You can use almost any kind of oil that happens to be available, even machine oil thinned considerably with kerosene. This treatment will condition the surface of the concrete so that lacquer coatings will not stick to it; in other words, accumulations of lacquer and paint can be removed easily from such a treated surface.

To use wax or some types of spray booth (wall) coating would make the floor slippery and perhaps endanger the operator.—ED.

Navy Doesn't Indorse Z. C. Substitute

The Bureau's attention has been called to the description of a new micaceous pigment (Micalith-G) for metal primers, which appeared on pages 136 and 138 ("Random Comment on the Industrial Scene") of September 1945 issue of INDUSTRIAL FINISHING.

In the course of this article, Micalith-G is referred to as "a superb and economical substitute for zinc chromate," and it is stated that "the Navy has already given its full approval to this new pigment".

The implication is that the Navy has approved, without qualification, the use of the pigment as a substitute for zinc chromate. The facts are that the Bureau has authorized no blanket substitution of Micalith-G for zinc chromate pigment in Navy Standard zinc chromate primer, Specification 52P18.

When zinc chromate pigment was in such short supply last spring that urgent Navy requirements could not be met, two contractors manufacturing primers were granted permission to use Micalith-G at a 30% by volume substitution for zinc chromate pigment. It is not contemplated that there will be any further extension of this permission to make the substitution.—*Bureau of Ships, Navy Department, Washington, D. C.*

Call on Randolph

for

A REALLY SATISFACTORY

AIR DRY CRYSTAL LACQUER

(prompt shipment)

•

A REALLY RELIABLE

TEXTURE (WRINKLE) ENAMEL

•

A REALLY BEAUTIFUL

HAMMERED METAL FINISH

•

RANDOLPH FINISHING PRODUCTS COMPANY

CARLSTADT, N. J.

Production Finishing Products for Industry

Materials Supplies Equipment

New Aircraft Lacquer Assures Safety

A new aircraft lacquer that assures greatly improved safety in airplane operation by reducing fire hazards in lacquered surfaces is announced by Monsanto Chemical Co., St. Louis 4, Mo.

"Skylac", the new Monsanto finish, was developed for use on fabric-covered, exterior control and plane surfaces and on interior decorative areas. It combines increased weather resistance, high tautening effect and ease of application with high fire resistance.

When exposed to flame, Skylac-surfaced fabric will not support combustion; under the same conditions, conventional materials flare up in a quick flame. Because of its high solids content, fewer coats are required than with the usual cold spray finishes. Since Skylac is designed to spray at room temperature, no special equipment is necessary.

As much as 1000-sq. ft. of fabric-covered area on large transport planes will be finished with the new material. These include ailerons, rudders and elevators, where metal is not suitable.

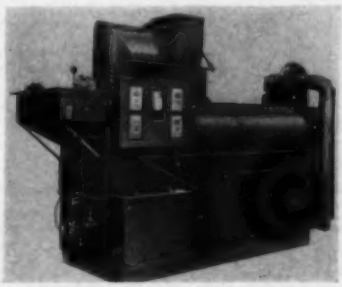
Large additional areas including interior walls and bulkheads covered with light-weight decorative fabric will also be finished with Skylac. After exhaustive small scale tests, one of the major airlines is now using Skylac on transport planes. In light fabric-covered planes, Skylac is expected to find wide use.

As with other finishes, Skylac serves not only as an impervious finish but as a tautening agent on the fabric, adding measurable strength as the covering tightens around the airframe. Materials previously used to attain this effect were either highly inflammable or had poor weatherability. Skylac is now in commercial production at the Everett, Mass, plant of Monsanto.

Rinsing, Drying Machine

A new machine especially designed for the rinsing and drying of small stamped parts, is announced by Optimus Equipment Co., 209 Church St., Matawan, N. J., manufacturer of equipment for the washing, rinsing, pickling and drying of metal parts.

The new machine is versatile in its applications. It can be used for washing and drying, or rinsing and drying, or any part of these



Optimus rinsing and drying machine.

—and Ready Now to Serve You

These satisfying Hilo Protective Coatings are now ready to serve you.

Although a few raw materials remain tight, we are able to supply these coatings and many other coatings you have used in the past.

Send your orders now.

HILO **HILO VARNISH CORPORATION**

42-60 Stewart Avenue, Brooklyn 6, N. Y.

2420 Washburne Ave., Chicago 8, Ill. • Park Sq. Bldg., Boston 16, Mass.

operations. It is also adaptable to a wash-drain, rinse-drain, cold or hot-air dry operation sequence.

This equipment can also be adapted for pickling operations. The air steam passes through a heater and blower, providing for either or both cold and hot-air blast system. Air loss is avoided by completely enclosed dryer end.

The various parts of the machine are readily accessible for lubrication, maintenance, or alterations and cleaning such as might be required in hard water areas. Centralized lubrication may be provided.

Corrosion Resistant Coating for Plating Equipment

Mr. D. T. Kelly, Foreman of the Paint Department of the Amertorp Corp., at the U. S. Naval Ordnance plant, Forest Park, Ill., has made an illuminating study of corrosion resistant coatings and their application to plating rooms and plating room equipment, after many years of intimate contact with them.

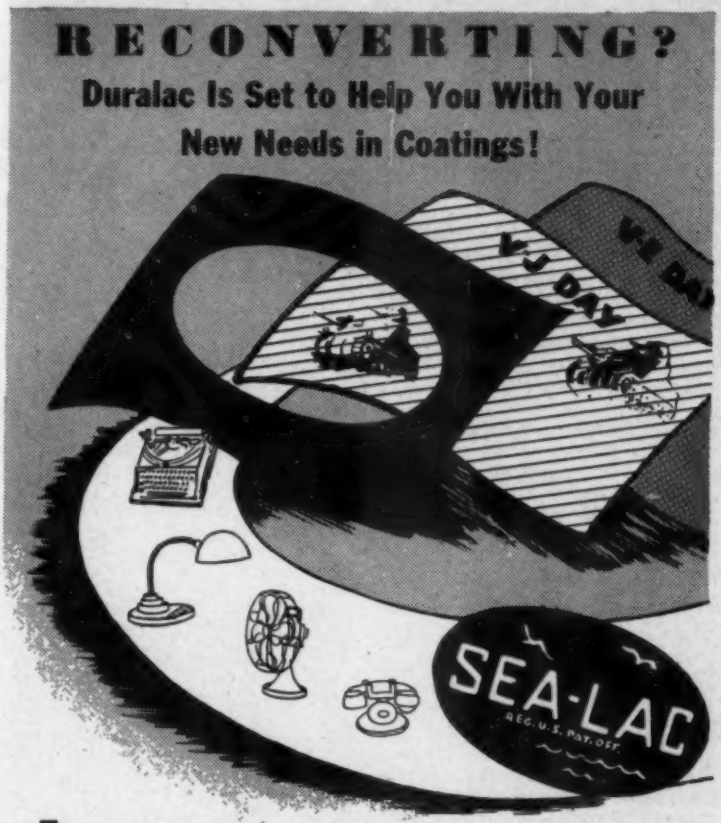
The extremely severe corrosion which exists in most plating rooms and on plating room equipment is well known by the industry. Fumes from pickling baths and chrome tanks, together with the drip and spillage from sodium cyanide, chromic and sulfuric acids, copper sulfate, sodium hydroxide, and other plating chemicals, create a complex corrosion problem.

During Mr. Kelly's several years at Amertorp, a number of different surface treatments were tested, the best of which deteriorated after 30 to 90 days' use. However, during this testing period a coating was found which appeared to have all the required properties. He reports that it is easily applied. It is tough, abrasion-resistant and has excellent adhesion over steel,

Plating room wherein tanks and other equipment are attractively painted.

RECONVERTING?

Duralac Is Set to Help You With Your New Needs in Coatings!



AT a moment's notice, we can step in and aid you in working out the specific finish you require. That's because we are a flexible organization, offering a tailor-made service. We proved our versatility to the complete satisfaction of many harrassed manufacturers throughout the tough war years. Today, with the release of long-absent materials, we're geared to do an even better job of trouble-shooting . . . Let us know what your reconversion program calls for in finishes. We'll give you the benefit of our specialized skills and knowledge.

DURALAC CHEMICAL CORPORATION

LISTER AVENUE NEWARK 5, N. J.

concrete or wood surfaces. Its heat resistance is adequate, even for the exterior of tin plating tanks at 160°F. In areas where it is exposed to continuous damp and humid conditions, it stands up well, having a moisture absorption so extremely low as to be negligible. Its acid resistance is good, including acids such as hydrochloric, sulfuric, phosphoric, and chromic. It has excellent caustic resistance, and is unaffected even by continuous exposure to caustic solutions. Around equipment where exposed to oils and greases, it shows no effect by these petroleum products; and it is available in pleasing light colors which do much to improve the appearance of a plating room.

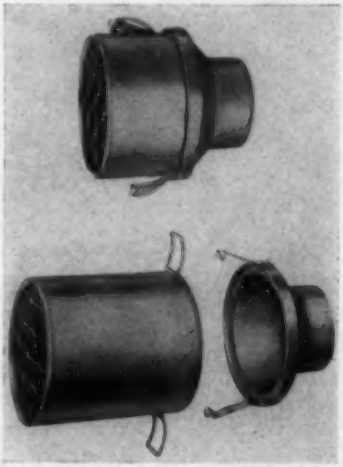
This material was applied to 71 steel tanks, six wooden tanks, a number of plating rack frames, and several large fume ducts during the six months period subsequent to December of 1943. Today it is still in its original condition, as shown in the occompanying photograph.

The coating selected by Mr. Kelly for the protection of this Amertorp plating equipment is Amercoat No. 33 Plastic Coating, manufactured by the Amercoat Division of the American Pipe and Construction Co., Los Angeles, Calif. This coating is a combination of the most resistant vinyl resins, pigments, and plasticizers and combines into the coating many of the properties and the resistance of moulded plastic products from the same materials. The coating is applied cold, and requires no force drying or baking. As the solvents evaporate, the inert plastic film is formed.

The most effective method of surface preparation for this coating is to sandblast all metal surfaces to remove rust, mill scale, previous coatings, and corrosion products. The coating is then applied by brush in five separate coats to form a film of appreciable thickness. Quick drying of the coating makes it possible to apply coats at 2-hour intervals. The surfaces of the wooden tanks must be clean, dry and well sanded before any application of the coating is made.

Far-Air Filters

A new type of air filter, originally designed for railroad service and thoroughly proven in this exacting field, is now available for quick installation on air compressors of all types and any machinery requiring air filter equipment. It is a product of the Farr Co., 2615 Southwest Drive, Los Angeles, Calif., manufacturers of an extensive line of industrial air filters.



Filters can be quickly and easily removed, cleaned and replaced.

PRECISION FORMULATED · PRODUCTION TESTED

Quality Coating Finishes

for METAL · WOOD · COMPOSITION · PLASTICS · PAPER · ETC.

HIGHER SOLIDS
FEWER COATS
LOWER COSTS
RESULT
BETTER QUALITY
AND
ECONOMICAL FINISHING

For wood finishing, we offer:

20-501 CLEAR WOOD LACQUER
and
20-100 SANDING SEALER

Extreme ease of application. So balanced, they do not sag on vertical surfaces. Formulated for maximum solids contents—whether sprayed, dipped or tumbled.

20-100 SANDING SEALER—dries quickly. Sands easily without gumming up paper. Produces smooth, hard surface for top coat application.

20-501 CLEAR WOOD LACQUER—Its high quality solids content makes possible rapid, non-sagging application. Produces a high gloss, durable, mirror-like surface. Can also be used to produce a gloss finish in one coat direct on wood without use of sealer, where this type of finish is desired.

It will be well worth your while to try these two lacquers in comparison with what you are now using. Write for samples NOW—while you are thinking about it.

***Note:** When writing advise us what article is to be finished. Quality and type of finish required. Method of application. If possible —send sample of unfinished piece and sample of finish desired.*

TEXON INDUSTRIAL COATINGS

TEXON INDUSTRIAL CORP.

Manufacturers of

LACQUERS · ENAMELS · SYNTHETICS · THINNERS
WRINKLES · AUTOMOTIVE COATINGS
PAINTS · VARNISHES

General Offices: 10-05 50th Avenue · Long Island City 1, N. Y.

Identified as the Far-Air EC filter, it will be made in diameters of 7 to 14-in., with capacities of 90-cfm. to 730-cfm.

The complete unit is composed of the filter element enclosed in a cylindrical steel housing, and a cast iron adapter base. The filter element is of the same herring-bone crimped screen design used in Far-Air ventilating filters, permanent and easily cleaned.

Far-Air EC filters are installed by screwing the cast iron adapter fitting onto the intake pipe. This adapter has a standard 3-in. pipe thread and remains permanently in place. The filter unit is then locked into the adapter; bale handles on the filter unit barrel snap into heavy-duty spring clips attached to the cast iron adapter.

These filter units can be cleaned with high pressure hot or cold water, or by agitating in a tank of any good commercial cleaning solvent. Once cleaned, they should be dried and re-oiled before re-installing.

2-Color Spray Gun Gives Unusual Finishes

Two-coat spatter finishes and simulated hammered finishes which give the effect of iridescent metal are now possible in one spraying operation with Dimenso, a newly-developed spray gun that sprays two colors simultaneously through one nozzle.

The Dimenso gun, a development of the Sherwin-Williams Co., Cleveland, Ohio, differs but slightly from ordinary spray guns in appearance or operation. It has the normal spray fan control valve and fluid control valve, trigger assembly, head, fluid tip and needle. However, it has an additional fluid inlet near the head of the gun to accommodate a second color paint.

Comparing favorably with texture finishes for bridging and masking metal imperfections, Dimenso sprays rapidly in either manual or automatic application. The formulation of the Dimenso coatings and the design of the spray equipment permit uniform coating at any angle with low sensitivity to film thickness and minimum sagging tendency.

New Finish Patterns

A large number of pattern styles are obtainable with the Dimenso gun. Some of the more common include smooth finish color over color, color over metallic, metallic, and a combination of metallic enamels producing hammered finish effects.

Primarily, Dimenso is furnished in three types of finishes, all bak-

Spraying a "hammered" pattern finish with the Dimenso spray gun, spraying two colors simultaneously through one nozzle.

For Complaint-free Postwar Sales

The GUARDSMAN Production Staff

. . . trained personnel using the most advanced modern equipment, utilizing knowledge gained from war-time technological improvements, THE GUARDSMAN PRODUCTION STAFF have an enviable earned record for producing furniture finishing materials of constant uniformity and trouble-free working qualities.

GRAND RAPIDS VARNISH CORPORATION
GRAND RAPIDS, MICHIGAN

ing 30 minutes at 300° F., or its equivalent. These are:

1) Hammered or Spot Pattern. In this pattern the metallic finishes will give a definite, well-defined spot type of hammered finish effect. The non-metallic color finishes will show a sharply outlined spot with a minimum blending of the background and spatter colors. The depth or dimensional quality of the film will be apparent to a lesser extent in this type of pattern than in either of the others, but this pattern will give an effect more nearly like a hammer or spatter finish obtained by a separate operation.

2) Toned Hammer Finish. In this pattern, the hammered or colored spots in both the metallic and non-metallic finishes are not so definitely defined. A very beautiful and unusual spot or hammered effect is obtained, with a softly feathered-out blending of the two component enamels, making for tremendous depth or dimensional quality of finish, particularly in the metallic variety.

3) Diffused Pattern. This pattern is characterized by the rather vague and irregular pattern of the spots in both the metallic and non-metallic finishes. The spots lack definition as in the case of the toned pattern, but the general effect shows much more blending than is the case of the toned pattern. The depth or dimensional quality of the finish, although less apparent than the toned pattern, is more pronounced than the straight hammered or spot pattern.

The coverage obtained with a Dimenso gun closely approximates that of standard high gloss enamels, roughly 450-sq. ft. per gallon for the spatter and 263-sq. ft. per gallon for the background. Dimenso enamels are characterized by their excellent toughness, hardness and flexibility, coupled with high gloss and excellent fullness of appearance.

The new Dimenso spray guns are obtainable only on lease from The Sherwin-Williams Co. New patterns and enamels formulated for customers will be registered for exclusive use in their fields.

Coating for X-Ray Equipment

To protect the tanks and splash boards of X-ray developing machines, Pako Corp. coats them with Sterilkote protective finish based on Vinylite resins. Before applying this finish to their line of X-ray processing equipment, Pako tested Vinylite plastic coated steel for ten months with various photographic solutions. Results were promising, and led to the specification of the coating as a protective

Pako X-Ray Filmachine. Photograph, courtesy of Bakelite Corporation.

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Regaining this art today is simplified by using FINISHINE LABORATORIES' processes of product finishing, repairing, patching and refinishing. Send for our 200-page catalog which features among hundreds of items, the well-known Lubricol Pad-O-Paque Process; the Master Finishers' Supreme Service Finishing and Porcelain Repair Kits; Lacstix Burning-in-Stix; the Deluxe Finishine's Electric Burning-In-Knife. Write today!

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finish for all splash panels and structural members.

Pako has found that the plastic surface furnishes a continuous protective coat that withstands the constant attack of the solutions used, and washes clean from stains with no change in efficiency.

Power-Flex Conveying Unit

To meet present day needs for flexibility in conveying equipment, Island Equipment Corp., 101 Park Ave., New York 17, N. Y., has placed on the market a small powered belt conveyor unit, in 10, 5 and 3-ft. lengths.

These units can be coupled together to make as long a conveyor system as may be wanted. They can, due to their short lengths, be twisted around to form any shape; they will convey on the level, up or down grade. Two sections will make a 30° turn, three sections 60°, and four sections 90°.

The entire assembly or system (from one end to the other) can be controlled from the unloading end, by positive push button control. The speed of all units is coordinated or synchronized as though it were one unit.

Portable flat-bed power conveyors.

The belts of these units come in three different widths, 12, 16 and 20-in. They are driven by the firm's Power-Pac Motorized Power Unit. Each unit is equipped with ample ball-bearing swivel casters that permits them to be quickly and easily moved.

The space that naturally forms where two fixed parallel ends meet when these are turned at different angles, is cleverly taken care of by a patented set of differential rolls that can quickly and easily be dropped in place between the two units. As the conveyed material passes over these rolls, it is guided into the next conveyor and so on to the end of the system.

Oil-Like Coating Prevents Rust During Storage

"Peroline", a product of American Chemical Co., Ambler, Penna., is an oil-like chemical used to coat iron and steel products that are later to be painted, to prevent the surfaces of these products from rusting in storage or transit. Peroline develops a thin oil-like coating securely bonded to the metal. It prevents rust from developing under the oil film by reacting chemically with the metal to remove traces of rust, eradicate handmarks and to destroy other visible or invisible rust stimulants.

When preparing Peroline-coated work for painting it is only necessary to remove the oil by vapor degreasing, or with suitable petroleum or coal-tar solvents, being careful not to mar the conditioned surface with handmarks.

In spite of the very thin film produced, Peroline is extremely ef-

There will be NEW

- **finishes**
- **patterns**
- **designs**
- **materials**
- **products**

***there will also be the* OLD**

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***manufacturers* • lacquers, fillers, stains, enamels, paints**

Chicago 14

fective in preventing rust. The film is compatible with most oils or greases used to prevent rust, and if special conditions require a thick coating of these, they may be applied on the Peroline-coated metal and thus provide even greater protection.

Portable, Pressure Cleaning Machine

On work where it is desirable or possible to use a flow or spray of treated water under pressure for the surface cleaning job, the Drill Mfg. Co., Circle Tower, Indianapolis 4, Ind., offers such a machine. A small quantity of cleaning compound is placed in the water, but this compound, according to the company, is not caustic, acid, soap nor abrasive. The outfit doesn't use heat or steam and it isn't a fire hazard.

In order to remove some kinds of stubborn deposits, a pre-soaking is needed to loosen the objectionable material before it can be washed off with 400-lbs. of water pressure. Accordingly, a pre-soak tank is included in the unit for taking care of this type of cleaning.

In appearance, the No. 1 machine looks like a large box mounted on small wheels. It has a pressure dial, hose and connections, and an electric cable by which power enters for driving the 1-hp. motor within.

Flexible Wrinkle Finish

"Wrinkle" finishes, now familiar to millions who use or observe office appliances and machines, electrical appliances, cameras, bench tools and many similar articles, have become the most versatile in the coating field with the successful introduction of a new formula employing rubber latices, by New Wrinkle, Inc., Dayton, O.

For many years after its introduction, "Wrinkle" was used almost exclusively on metal and other materials which would stand baking temperatures in excess of 200° F. A flexible coating, containing all the characteristics which had made wrinkle finishes so popular on metal and other rigid substances, was later developed and applied successfully to paper, leather and fabrics. This flexible coating could be dried after application at temperatures as low as 130° F.

The new synthetic rubber "Wrinkle" finish is important in three particulars:

1) It is considerably more flexible than previous formulations, ranging to the extreme in flexibility and pliability.

2) The surface patterns are of far greater variety than have been previously obtained.

3) Formulation is by straight mixing of components and requires no cooking.

This synthetic rubber "Wrinkle" coating consists of two components which are compatible with each other; however, during the initial drying or film-forming period, these ingredients separate into distinct phases and thereby the texture of the wrinkle pattern is altered depending on the relative proportion or ratio of the components. The pattern may also be varied according to the type of elastomer used, by varying the time or temperature during the drying period, and by a choice of methods of application.

This development is not limited to any single type of synthetic rubber. Particularly interesting results have been obtained with

Accenting effectively the charm of costly woods and distinguished craftsmanship, Marietta Fine Finishes for years have been preferred by many leading makers of quality furniture.

They are formulated to the exact needs of each job by skilled American-Marietta technicians. Long-lasting beauty and stepped-up sales appeal are assured . . . with no production-line penalties.

Keeping abreast of the new developments in finishing formulation, application and production procedure is a most important part of our service. We'll welcome the opportunity of working with you.

A great name in paint making

AMERICAN-MARIETTA COMPANY

Marietta Chicago High Point

copolymers of butadiene and styrene, and of butadiene and acrylonitrile. Polyvinyl chloride and neoprene have also been used successfully.

Flexible finishes which have been produced recently from the latex formulations range from a fine suede to heavy embossed patterns; one texture closely resembles the conventional skiver grain. These patterns are especially important in the production of artificial leather finishes.

All Wrinkle finishes may applied to metal, wood, glass, porcelain, chinaware, paper, cardboard, fabrics and leather. Application may be by spraying, rolling, spreading or dipping. Drying may be either in gas or infra-red ovens.

"Wrinkle" finishes are produced by approximately 200 manufacturers of paint and varnish, licensed under patents held by New Wrinkle, Inc., of Dayton, Ohio.

Covered Container for Paint and Brush

New containers for a wide range of shop uses are announced by the Kindt-Collins Co., 12651 Elmwood Ave., Cleveland 11, Ohio. There are sturdy, handsome containers of heavy aluminum, built to stand plenty of abuse in daily shop service. A crossbar support inside the container can be readily removed for cleaning. This serves both as a wiping bar for surplus material on the brush, and as a unit upon which to hang the brush when it is not in use.

Useful and handy in many ways.

A cone-shaped top which fits snugly over the can, covering both the brush and the contents, prevents hardening and evaporation. The aluminum will not stain or discolor the contents of the can. This new container is available in one and two-quart sizes for varying needs.

"Uni-Fill", A New Quick-Dry Furniture Filler

"Uni-Fill" is the name of a quick-drying furniture filler developed by the Advance Paint Co., Indianapolis 7, Ind. It was developed during the war for post-war fast production in furniture. "Uni-Fill" has been used in production, in a number of furniture plants, for a year. Because of restrictions on the quantity of materials used in its manufacture, the manufacturer was unable to present it to the entire trade. Now that its ingredients are more plentiful, it is available to everyone.

The outstanding characteristic of "Uni-Fill" is that it entirely eliminates a long period of time for air drying or force drying. While force drying may be used, if desired, no particular advantage is gained by this operation. "Uni-Fill" is applied, wiped and allowed to dry from 10 to 30 minutes. Then the filled surface is ready for lacquer sealer. This is a new product which may be used only under lacquer-type sealers.

The method of applying this new filler is the same as with the old type standard fillers. It may be

Here's a tough piece of goods

Cannot be marred or scratched — just thumb nail it; try to scratch or mar it.

MAR PROOF LACQUER

Just the material for your postwar product finish. It takes hard knocks. Will stand up under the most severe conditions. Protects as no ordinary lacquer will do! Definitely, your product needs such a finish. This Mar Proof Lacquer produces a splendid transparent finish of full depth on maple, walnut, gum, mahogany and other cabinet woods. Is made in either the Clear Gloss Rubbing or the Satin Finish. Mar Proof Lacquer Sealer is recommended with it for the first coater.

Test Mar Proof Lacquer on your own product—that's all we ask. Working samples free upon request.

THE SCHAEFER VARNISH COMPANY
LOUISVILLE, KENTUCKY

brushed, dipped or sprayed. "Uni-Fill" wipes easily, fills completely, and will not swell or shrink in the pores. For brushing, "Uni-Fill" is ordinarily reduced at the rate of approximately 10-lbs. of filler to the gallon of reducer. For spraying, an additional amount of reducer should be added to suit the requirements of the operator. The amount of reduction for the dipping process is dependent entirely upon the object to be dipped, as well as on the requirements of the operator.

Airplane Lacquer by Du Pont

An air-foil pyroxylin sea-blue lacquer, specially developed by Du Pont, is used on the Navy's newly announced FR-1 Ryan "Fireball", the fighter plane with a conventional motor in the nose and a supplemental turbo-jet unit in the rear for quick take-offs from carriers and sudden bursts of speed when needed.

The Fireball's top coat had to be flexible to withstand vibration at extremely low temperatures. It is similar to the finish provided for the Army's P-80 "Shooting Star". A special thinner had to be evolved to allow the exceedingly fast-drying lacquer to flow out to a smooth film, thereby minimizing compounding.

Aircraft-type putty is used to fill surface imperfections on the leading edge of the wings. A Du Pont zinc chromate primer is applied to help protect the metal from corrosion. Over this a liberal coat of surfacer is applied and sanded, followed by the top coat, which is polished to glass-like smoothness through the use of rubbing compound and spray wax, both made by the Du Pont Finishes Division.

Compar Protective Clothing Helps Workers

Wherever workers handle oils and solvents, the twin dangers of dermatitis and folliculitis lurks.

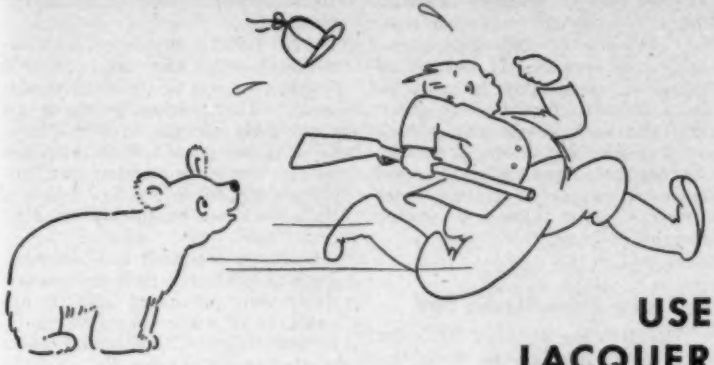
Compar gloves protect workers who dip parts in such protective coatings as zinc chromate, and those who spray or brush on paint.

The best obtainable protective clothing is an absolute necessity if workers are to be safe from these dangers.

Compar, the transparent vinyl resin derivative developed by Resistoflex Corp., Belleville, N. J., has been worn by thousands of workers who handle oils and solvents. Some plants even require such workers to wear compar clothing because of the long-lived protection it provides. Completely impervious to all oils, solvents and gases, this clothing rules out as unnecessary the diseases that result from contact of the skin with oils and solvents.

Complete freedom of movement

WHEN SPEED IS IMPORTANT



USE LACQUER

In today's race for civilian markets, even one or two hours saved in production time mean extra profits . . . better satisfied dealers. You can save those hours—perhaps days—by changing to lacquer, the finish that air-dries in minutes and forms a beautiful, durable coat. Ask any supplier of lacquer.

C.S.C. makes no lacquers or thinners but supplies solvents and plasticizers to manufacturers of protective coatings.

CSC

COMMERCIAL SOLVENTS
Corporation

17 East 42nd Street, New York 17, N. Y.

is afforded by these light-weight compar garments which are flexible yet tough. Workers can wear ordinary work clothing when same is covered by cellophane-clear aprons or smocks. If the job requires it, workers can be protected from head to foot from a choice of caps or tie-arounds; aprons, semi-smocks or full-length smocks; sleeveguards and gloves, which come in various sizes from wrist-length to long gloves to protect sleeves or arms.

New Black Plastic Dye

The Krieger Color & Chemical Co., 6531 Santa Monica Blvd., Hollywood 38, Calif., manufacturers of "Kriegr-O-Dip" plastic dyes, announces perfection of a successful black plastic dye that can be applied in 15 minutes, producing a permanent ebony shade. This new product is now available in all four major types of plastic dye which this firm produces.

"Kriegr-O-Dip" dyes are produced in 14 colors, all of which are intermixable, which gives plastic manufacturers an unlimited variety of shades and effects to meet the color demands of their trade.

Protects Zinc and Cadmium Against Corrosion

The Unichrome dip process, announced by United Chromium, Inc., 51 E. 42nd St., New York 17, N. Y., is a convenient and economical means of obtaining corrosion protective coatings by dipping. Developed expressly for zinc and cadmium surfaces, this process produces either black or olive drab finishes which not only prevent formation of white corrosion, but also retain the original luster. In addition, this finish provides a base for paint or lacquer which is far superior to that of untreated metal.

No racking is needed, no electric current; just use suitable baskets, barrels or tumbling equipment. The coating produces no appreciable change in the dimensions of the parts. Work requires but a single immersion in Unichrome dip, for two to five minutes. Bulk work can be quickly dried by centrifuge.

Coatings produced in Unichrome dip and subjected to standard salt spray tests prevented the first appearance of white corrosion for up to 200 hours. Zinc plated parts treated in Unichrome dip meet the requirements of specification AN-P32a.

Custom Built Ovens

The Despatch oven shown in the accompanying picture is designed especially for the speedy and efficient baking of wound armatures and stators for electrical machinery. It is really a compart-

A peek into oven compartment in which insulation coatings on coils of electrical wiring are baked.

ment of a battery of gas fired "S" type ovens. Each compartment is 7-ft. wide, 7½-ft. long and 7½-ft. high. A maximum temperature of 550° F. is provided to process Silicons as well as standard varnishes.

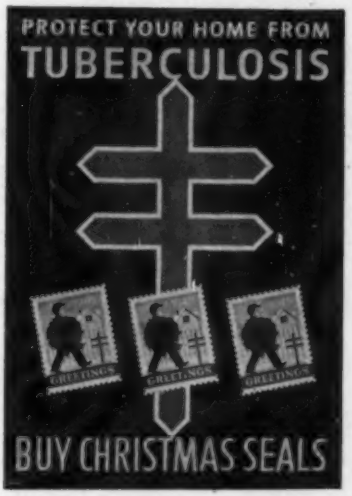
Each compartment is equipped with full automatic temperature control to maintain predetermined temperatures, and a complete safety system to meet Factory Mutual Fire Insurance Underwriters specifications. This unit was designed and built by the Despatch Oven Co., Minneapolis 14, Minn.

Strips Off Bake Finishes

Concentrating on the problem of perfecting an efficient general purpose stripper for cleaning spray guns, pressure tanks and for stripping reject painted parts, Bede Products Co., 3360 W. 82nd St., Cleveland 2, Ohio, has developed and now offers to the trade "Trianol." Stripping is accomplished by simply immersing the part in a Trianol solution, followed by a water rinse or blowing off with air. Very little scrubbing, if any, is required.

Trianol stripper is shipped in concentrated form. Water is added in the ratio of two or three parts of water to one part of Trianol. More water can be added, but the action will be proportionately slower.

The part to be stripped must be immersed in the solution. The time of immersion required depends mainly on the temperature of the solution, and also on the type of finish. A heated solution will strip in a few minutes, while a cold solution may require overnight. The company recommends heating the solution to 160° or 170° F.—but not by open flame.



American-Marietta Acquires Leon Finch Co.

The acquisition of Leon Finch Co., Ltd., Los Angeles, Calif., is announced by Grover M. Hermann, president of the American-Marietta Co., Chicago. Established in 1931, Finch manufactures lacquers, synthetic enamels and automotive re-finishing materials.

Leon Finch, founder of the company, will remain as President and General Manager to manage the business. This firm, along with Schorn Mfg. Co. and Solastic Products Co. of Seattle, recently purchased by American-Marietta, gives the company complete facilities for manufacturing all types of finishes on the Pacific Coast.

More Paint Brushes to Come From P. P. G. Co.

A $500,000 addition to the Keene, N. H. plant of the Pittsburgh Plate Glass Co., designed to increase the manufacturing facilities for the production of brush handles and stapleset brushes, is announced by company officials. The addition to this unit is in line with Pittsburgh's countrywide expansion program.

Booklets Catalogs Circulars

Alkyd Resins as Bonding Agents

A 6-page typewritten article on the above subject, prepared by two important authorities, can be obtained from the Glycerine Producers' Ass'n., 11 W. 42nd St., New York, N. Y.

Air-Recovery Fuel-Saving Bulletin

An interesting and informative illustrated bulletin about the recovery, conditioning and re-use of heated air inside buildings has been prepared for free distribution by W. B. Connor Engineering Corp., 114 E. 32nd St., New York 16, N. Y. "You save fuel, energy and equipment when you save conditioned air."

Infra-Red Ovens, Conveyors Illustrated in New Bulletin

A variety of sizes and designs of "Dual-heat" infra-red ovens for paint drying, and conveyors of different types for moving the work through production processes, are illustrated and briefly described in a new 12-page bulletin which can be obtained free by writing Jensen Specialties, Inc., 9331 Freeland Ave., Detroit 27, Mich.

Weatherproof Shipping Boxes

A new illustrated brochure on Vs-Solid Fibre Boxes contains an interesting report pertaining to the wartime development and the outstanding performance record made by Vs-Solid Fibre Boxes during the past few years. These boxes, created during the war, are now available for the first time to private industry, where they will set a new pace for efficiency, low cost of handling, high performance, stability, ruggedness and high protective qualities against weather and climate. Free copies can be obtained by writing to the Weatherproof Solid Fibre Box Group, 735 Eleventh Street, N. W., Washington 1, D. C.

Air Filtration Booklet

An attractive, colorful and informative booklet of 16 pages, bound between covers of modern art, carries the title, "The Magic of Electronics in Air Filtration". Contents reveal unusual information about air and the cleaning of air for industrial use. The entire booklet—paper, printing and original colorful art work—is of remarkable high quality in every respect. A free copy can be obtained by writing American Air Filter Co., Inc., First and Central Ave., Louisville 8, Ky.

Book on Polishing, Buffing

The Industrial Finishing Division of the McAleer Mfg. Co., Rochester, Mich., has just issued a new, illustrated, 24-page industrial finishing reference manual on "Polishing, Buffing and Deburring".

Among the finishing materials listed in this catalog are those old "standbys" of pre-war days which have been retained because of proven usefulness and new finishing compositions developed for postwar production finishing needs.

For the man who uses or specifies industrial finishing materials, this booklet tells when and where to use what compositions; it summarizes and interprets applications; offers helpful suggestions for present-day finishing of all types of metals, non-metals and plastics.

The McAleer catalog is free and available to all qualified industrial finishing material users. To secure a copy, write Industrial Finishing Division, Dept. P-1, McAleer Mfg. Co., Rochester, Mich.

New Office Building to be Built by Du Pont

Plans for a new 18-story office building to be erected at Tenth and Tatnall streets, Wilmington, Dela., as an addition to the Nemours Building are announced by E. I. du Pont de Nemours & Co. Construction is to start next Spring, and the new structure will be completed by the Spring of 1947. A preliminary estimate of the cost is approximately $3,000,000.

"When you said, 'Really Smooth!', how was she to know you meant the finish that S-I-P CLEEN-UP Polish gives these table tops?"

BRINGS OUT THE FULL BEAUTY OF THE FINISH . . .

S-I-P Cleen-Up Polish

Increase the sales appeal of your product by using S-I-P CLEEN-UP Polish—no fuss, no bother, no hard rubbing!

S-I-P CLEEN-UP Polish can be used on the finest finishes with the utmost confidence. It is manufactured under careful laboratory control and is fully guaranteed by the makers of the famous WEAR MASTER Finishes.

You can TRY IT FREE—just clip and mail the coupon.

SMOOTHIE'S FREE TRIAL

S-I-P CLEEN-UP POLISH

Just clip this coupon to your letterhead and mail it to us for a generous free sample of S-I-P CLEEN-UP POLISH. No obligation.

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STANDARD INDUSTRIAL PRODUCTS, INC.

Wear Master

Industrial FINISHING

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Editorial

November—Our 21st Birthday

NOVEMBER, the traditional month of Thanksgiving, carries special significance for INDUSTRIAL FINISHING Magazine. It is the publication's birth month. The first issue of INDUSTRIAL FINISHING Magazine appeared 21 years ago. The publication still remains under the ownership and management of the individuals who started it. Some advertisers in that first issue are advertisers in the magazine today, and many of the men who read the November 1924 issue will receive and read the November 1945 issue. A few individuals have a complete file of copies from No. 1, Volume I, to and including this No. 1, Volumne XXII.

INDUSTRIAL FINISHING has always endeavored to live up to the policy stated on page 5 of its first issue. Quoting from that editorial:

"In its pages the publishers will strive to include only what practical men desire in the way of a live finishing journal. Pages will not be padded with space writing, lengthy reports or matters about which finishers and factory executives have little if any interest. INDUSTRIAL FINISHING respects the value of its readers' time and energy, and will endeavor to limit reading matter to worth-while subjects presented in a clear and thorough manner.

"We recognize the following basic truth in journalism, namely, that what the majority of readers desire, in the way of reading matter, must be the guiding editorial policy of a successful publication. Practical articles and illustrations, therefore, will be supplemented by notes and news of the trade, featuring particularly what is new in the way of finishes, finishing equipment and finishing processes."

Evidence that the publication has been well received and patronized by leaders in the industries which it serves, can be found in any issue. Further testimony to this fact abounds in the publication's bulging files of correspondence—and in the hearts and minds of its many friends. Tens of

The LID'S OFF!

ALL RESTRICTIONS ARE LIFTED

.....

We are now back in production of civilian goods with a full line.

No longer is it necessary to use substitute materials for civilian goods. Send us your finishing problems now. If you are reconverting from war to peace items let us help you get the right finish for a good start.

Custom Tailored Finishes
TO FIT YOUR REQUIREMENTS

ALAKA
LACQUER & CHEMICAL CORPORATION
220 FORTIETH ST., BROOKLYN 32, N.Y.

thousands of inquiries for information have been serviced during the magazine's 21 years of lively existence.

Typical of what readers think of the magazine is expressed in a recent letter from an experienced foreman finisher for an important concern that manufactures steel products. He writes:

"As a reader of your magazine, allow me to say that my inadequate vocabulary prohibits the praise I should like to pass on to members of your organization. It would be hard to imagine a magazine covering the field for which your magazine is intended more thoroughly. I have obtained much help and information through articles and editorials printed in I. F. I have the magazine sent to my home to make sure that I do not miss a single copy."

Equally typical is a recent letter from an advertiser who writes:

"We wish to express our appreciation for the cooperation and service INDUSTRIAL FINISHING Magazine has rendered in the production and execution of our advertising. The many inquiries and direct sales we have received prove the effectiveness of advertising in INDUSTRIAL FINISHING."

In conclusion, the publishers take this occasion to express their appreciation for the splendid encouragement, cooperation, support and loyalty of INDUSTRIAL FINISHING'S many advertisers, readers and friends. INDUSTRIAL FINISHING will strive to continue to merit your confidence and admiration by living up to the high ideals which have kept it in step with all industrial progress, and maintained its leadership in the field.

There is enough "Scotch" tape in this jumbo roll to seal several hundred thousand packages. The girls frolicking with the contrasting sized tapes (30,000 small rolls can be made from the jumbo) are Elaine Steineck and Ronnie Fischer who help make it in St. Paul. "Scotch" tape, which has been away at war for nearly three years, had a relatively simple reconversion problem—just a matter of rerouting shipments from military and naval establishments and war plants to the nation's stores.

Fine Finish Calls for Clean Finishing Room

★ Remember, it is the finish that is going to sell your products. What you have to sell may be made of the finest steel or lumber that money can buy, but the prospective purchaser cannot see the bare steel or lumber. He sees the finish coating, and judges the product accordingly. Eye appeal is a most important factor.

The finishing room should be partitioned off from other depart-

★ Guest Editorial . . . Many readers can write an excellent editorial—two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

Mac's Fashion Bleach

WILL BLEACH ALL KINDS OF WOOD

MAC'S FAMOUS FASHION BLEACH is now available for bleaching all kinds of wood including mahogany the most difficult of woods to bleach. It dries overnight to a definite bleached effect ready to sand and ready for the regular finishing schedule. It can also be applied by spray using a GLASS container. Samples furnished on request.

The Lawrence-McFadden Co.

Headquarters for Fine Finishes Since 1875

7430 STATE ROAD **PHILADELPHIA 36, PA.**

Ballou's Metal Finishes

Will improve the appearance of your products and duplicate closely real plated finishes—

- **Super Bright Gold Bronze Powders**
- **Super Bright Copper Bronze Powders**
- **Chrome Aluminum Paint**
- **Chrome Aluminum Paste**
- **Aluminum Powders and Pastes**

Send for samples and prices.

EDWARD C. BALLOU CO.

6 VARICK STREET **NEW YORK 13, N. Y.**

ments, and the air within should be carefully controlled as to temperature, humidity, circulation, cleanliness and freshness. Ventilation is important in any finishing room, regardless of what methods of paint application are used. If the spraying process is employed, exhaust fans must be used, which means that a considerable supply of air is being continually drawn to and through the spraying station. If this air carries particles of dust or dirt, some of this is going to "speck" the surface being spray coated.

Provision must be made for the entrance of clean air, as well as for the exhausting of contaminated air. To make sure that air entering the room is clean, it should be passed through filters which will catch and retain any particles of dust, dirt and lint.

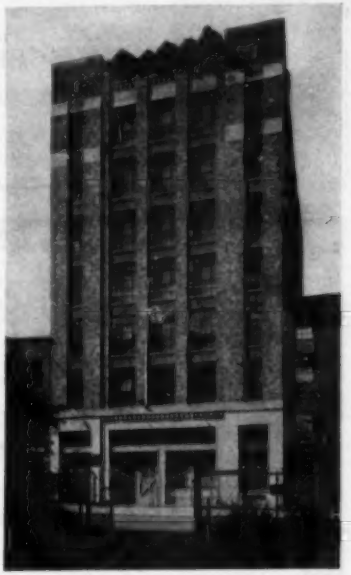
I have found that building up a slight air pressure in the finishing department helps to keep down dust, even when sweeping. This also helps to increase production. Employees will work better and faster in a room that is under a slight air pressure.

When the air being drawn out of a room is only replaced by that which comes in through the cracks and crevices around loose fitting doors and windows, the room is approaching a state of partial vacuum and does not lend itself to the proper functioning of the human system.

A large percentage of manufacturers know what they want, but are not quite sure of how to obtain that set of conditions where fast production stops and imagination starts. I suggest that they have a friendly talk with their spray equipment sales engineer. They don't need to feel that they must buy something just because they ask his advice. His training and past experience have shown him that it is mighty good business to save his customers money, and a little free advice pays dividends in the long run. Use the sales engineer's past experience to your advantage. He will gain, you will gain, and your customers will get a finish which they can be proud of.—W. BEACHAM.

Aided Atomic Bomb Research

Among New York sites where scientists worked to perfect the atomic bomb is the Interchemical Research



The Research Laboratories of Interchemical Corp., New York

Laboratories at 432 W. 45th St. Most of the 7-story laboratory building is devoted to studies of chemical coatings and related products, but in one closely-guarded section a group of Interchemical scientists worked secretly to help perfect history's most deadly weapon.

DUPOR

TWIN FILTER

RESPIRATOR No. 4

The favorite of users everywhere to guard against paint spray vapors and nuisance dusts! Made of soft, high grade rubber, foldable, reversible, fits any shaped face. Equipped with face cloth, it presents the utmost in comfort. Weighs only 4 ozs. Does not hinder conversation. Price $19.80 doz.

Sample $1.65 pp.

H. S. COVER, South Bend, Indiana

CEL-U-LAK No. 5354

Fast drying, clear protective film for metal surfaces

5354 CEL-U-LAK gives a thin, colorless, tough adherent film of great resistance to rust and tarnish . . . Widely used for tools, hardware, sporting goods, lighting fixtures, etc. . . . Can be reduced 100% to 200% and applied by dip or spray.

The Varnish Products Co.

5204 HARVARD AVE. CLEVELAND, OHIO

Finishing Products Co. Announces Appointment of Tufts

The Finishing Products Co., makers of wood finishing materials, Indianapolis, Ind., announces the addition to its organization, of Mr. John C. Tufts of Batesville, Ind., in sales and service. From 1928 to the time of this change, Mr. Tufts was superintendent over finishing at the Union Furniture Co., Batesville, Ind. His wide experience in furniture finishing will make his connection with Finishing Products Co. an invaluable aid to anyone with wood finishing problems.

Standard Varnish Appoints Erb Manager of Production

Mr. J. Heath Wood, President of Standard Varnish Works, announces the appointment of Mr. Charles E. Erb as manager of production efficiency. Mr. Erb was formerly in the Engineering Dept. of Standard Varnish in charge of the development and adaptation of Corex and other types of resistant industrial finishes. In his new assignment Mr. Erb will have charge of coordinating the activities of the various plants to increase production, improve efficiency, cut production costs and especially to put in practice operations and utilize equipment developed through war time demands. He will make his headquarters at the Chicago plant, 2600 Federal St., Chicago, Ill.

PAINT OVERSPRAY
From water curtained spray booths
Will purchase or reclaim
MECKLER CHEMICAL CORPORATION
3748 E. 91st St.
Cleveland, Ohio

MISKELLA
INFRA-RED OVENS & APPLIANCES
INSULATED - REFLECTIVE - SECTIONAL
INFRA-RED ENGINEERS & DESIGNERS

Suggestion System Proves Profitable

★ A few months back a vigorous editorial call was sounded in these columns by Norman Abramovice for more concerns to install a "suggestion system" whereby ideas, originated and turned in by employees for expediting production, cutting costs, saving time and conserving manpower, would be liberally rewarded.

This idea, of course, is by no means new. But cropping up again at a time when there is a most critical need for better relations between management and workers, it deserves far more consideration in top-level industrial executive circles than it has generally received heretofore. Certainly, there can be no question over the fact that it is at least one step in the right direction toward closer management-labor cooperation.

The multiple benfits to management and workers alike, that such a system can provide, is aptly illustrated by the experience of the Lincoln Electric Co., Cleveland, Ohio, manufacturers of arc welding equipment and supplies. Here, a suggestion system was devised and first installed in 1929. It was designed to liberally reward useful suggestions submitted by employees. If a man submits a practical workable idea for reducing costs and upping output, he immediately receives a check for half the money that his idea will save the plant during the first year.

During the past 16 years the system has netted hundreds of small suggestions. It runs approximately 50 per month, with about one out of every ten proving acceptable. Some workmen have

★ Guest editorial.

GOOD NEWS

for Industrial Finishers

The New, Patented

SUNBRITE METALLIC PASTE PIGMENTS

AVAILABLE for *Immediate Shipment*

SUNBRITE provides a Smoother and Brighter Finish for all kinds of metal products . . . and costs no more than the regular Bronze Powders. Available in all metallic shades. Covers more square feet per gallon — a better finish — AT NO EXTRA COST.

Patent Number 2,353,058

SUNBRITE Manufacturing Co.,
formerly The Mitchell-Mayer Co.,
3506 Market St. ST. LOUIS 3, MO.

TORNADO

settles your DUST *problem*

DUST will be LESS of a problem with the TORNADO Portable Electric Blower to blow it out of motors, generators, shafting, bearings, etc. TORNADO blows out dust, dirt, lint—with its swoosh of clean, dry air.

Powerful 1 h.p. universal motor makes it easy to clean largest motors or generators without dismantling them. Plugs in at any electric outlet.

Costs less than 3c an hour to operate. Weighs only 14 lbs. Investigate!

Write for details and FREE TRIAL Offer

TORNADO

BREUER ELECTRIC MFG. CO.
5094 N. Ravenswood Ave., Chicago 40

BLANCHIT
(Trade-Mark Reg.)
U. S. and Foreign Patents
WOOD BLEACH
Accepted Standard
For Furniture and Cabinet Makers
Also Interior Woodwork Recoloring
L. R. van Allen Co.
Patent Licensee
CHICAGO 54

received as much as $1000 for a single new idea.

Because the company recognizes and rewards these improvements in production technique, many workers have been able to increase their regular earnings through "suggestion savings" and, at the same time, to help the company produce a better product at a lower cost. This effective suggestion system is credited by Lincoln executives as one reason why the company today makes more arc welding machines and supplies than any other firm in the world—why it has become the world's lowest-cost welding producer as well as the world's highest factory wage payer.

Here is a suggestion system that clicks, that directly spurs production efficiency, that pays off handsomely to both producer and worker. Lincoln's experience with employee suggestions is perhaps duplicated in many concerns across the length and breadth of industry, but there are probably many more plants where similar opportunities abound for putting to work improved methods, time-saving and money-saving ideas suggested by employees.

Some one has said that, "If 'competition is the life of trade,' the trade of the not too distant future is destined to be the liveliest on record." If keener competition is to be "the order of the day" along the postwar industrial front, it seems perfectly logical that any idea which will help a manufacturer increase production, decrease cost and lower selling price and also help his employees increase their earnings, demands a trial. A suggestion system based on the principle of liberality to make it attractive possesses such possibilities; it warrants full investigation and study by all forward-looking executives. — A. P. SCHULZE.

Hercules' Construction Program

Details of a $30,000,000 postwar construction program covering all the chemical manufacturing departments of the company are announced by Hercules Powder Co. Construction of the new plants and increased facilities will be completed within the next three years.

The largest of the company's expansion plans will be put into effect by the Cellulose Products Department, resulting in a material increase in the production of various cellulose derivatives used by the lacquer, plastics, rayon, and other industries. Cellulose acetate capacity will be increased 100% to meet the demands of the plastics and rayon industries, and ethyl cellulose capacity is being increased 100% for plastics and protective coatings.

The Synthetics Department plans an increase in its productive capacity for the manufacture of rosin esters, hydrogenated rosin esters, hydroabietyl alcohol, and other resins.

Random Comment on the Industrial Scene

(Continued from page 10)

Goodyear intends to sell the houses as packaged units. Everything in the way of furnishings will be included in the purchase price, except such items as curtains, kitchenware and bed clothing.

* * *

Discounting The Boom — The high level of production reached during the war was a temporary development that will not be duplicated in the foreseeable future. That blunt statement comes from a top-flight economist — A. W. Zelomek, president of International Statistics Bureau, Inc.

"It is true," he declares, "that the reconversion decline in business activity will be short, though exceedingly sharp, and that there will be a spirited recovery getting under way early next year." But Zelomek adds that the belief that this recovery will carry us to new high records of national production is entirely without foundation.

* * *

New Cost Problems—One of the greatest dangers to full peacetime production, observes the New York *Times*, is the practice that has grown during the war of classifying as expert mechanics persons who can do only a fraction of the work normally demanded.

"Thus both management and labor are faced with the dilemma," continues this report, "of either whittling down the job to meet the existing skill of many workers, or of training them up to the point where they can earn the higher

How OVER-ALL *Even* Paint Baking was *doubly* Assured by JENSEN Ingenuity

AT Grand Rapids Metal Cabinet Company, ammunition boxes, conveyed thru infra-red dry-off and paint-bake ovens, had to be hung angular fashion in order to permit the paint to drain from the inside of the boxes. The problem: to distribute the heat evenly over the entire box. Jensen solved it by: (1) Shaping the lamp shields to the actual contour of the boxes, themselves, and (2) Employing "dual heat"—a combination of both convection and radiant energy heat. Result: No discoloration . . . even baking over all! Write Jensen about YOUR problem today!

JENSEN SPECIALTIES, Inc. **JENSEN** 9331 FREELAND DETROIT 27, MICH.

DESIGNERS and BUILDERS of "DUAL HEAT" INFRA-RED OVENS • STANDARD and SPECIAL CONVEYORS

DAVIDSON ENGINEERING SERVICE
Consultant Engineers
Conveyor Systems Labor Saving Devices
Plant Layout
Designers of Special Equipment
Address: Box 2941
Winston-Salem, N. C.

SOLVENTS RECOVERED BY
THE LOFGREN PROCESS
We RECOVER YOUR
SOLVENTS & THINNERS
From - Sludge - Waste -Wash - Spoiled Lacquers, etc.
Each customer's shipment, whether one drum or a carload, receives PROPER AND SEPARATE TREATMENT. Write To:—
SOLVENTS RECOVERY SERVICE
1019 Broad Street, Newark, N. J.
or
HAMMOND CHEMICAL SERVICE
241 Brunswick St., Hammond, Ind.

MIRACLE
5 Gallon
BLUE
BOY
Model
PAINT REJUVENATOR
Restores Paints, Lacquers, Enamel Products and Pigment Primers, to original consistency in 3 to 10 minutes without opening the can. Available for Round or Square 5-gallon cans. Explosion-proof electrical equipment if desired. Also other units from ¼-pint to 50-gallon drum capacity available. Originators of Paint Rejuvenating equipment—ten years—thousands of satisfied users.
Miracle Paint Rejuvenator Co.
127 E. 9TH STREET ST. PAUL, MINN.

salaries at a profit to management."

Most personnel directors, it appears, believe that the latter course is the only logical method to pursue.

* * *

Using Airplane Steel — The identical alloy used in the construction of our powerful B-29 bombers is now being employed in the production of lightweight, high-speed freight cars. Five test units have been put to work by the Rock Island Railroad Lines.

Designed by the Reynolds Metals Co., the freight cars are equipped with Timken roller bearings. It is said that the use of these bearings makes possible a reduction in starting resistance of almost 90%.

* * *

For Visitors—Readers of INDUSTRIAL FINISHING may obtain free tickets to leading radio broadcasts, upon request. When planning a trip to Manhattan, drop a line to: *Lawrence H. Singer, 130 West 86 Street, New York 24, N. Y.*

Among the cooperating sponsors are: Kirkman Soaps ("Can You Top This?") Raleigh Cigarettes (Hildegarde's "Raleigh Room"); and the Prudential Insurance Co. ("The Family Hour").

Randlett Advanced by P. P. G. Co.

M. R. Randlett has been appointed Assistant Divisional Director of Pittsburgh Plate Glass Co.'s Milwaukee paint factory. Upon his graduation from Rice Institute in 1922, Randlett joined the company at its Houston branch.

After serving as a territorial salesman he was appointed Paint Manager at Houston in 1925. In 1929 he was named Assistant Trade Sales manager of the Newark paint factory; in 1930 he moved to the Milwaukee plant to serve in the same capacity. Since 1932 Mr. Randlett has been manager of Trade Sales at the Milwaukee plant.

Fine...Fine
Superfine!
Claremont Flock
Finely cut fabric particles, many colors, many types . . . fluffy, yet filling. Excellent for sound-proofing, insulation and surface protection. Also, applied decoratively to assimilate suede leather finishes, velvet, velour and mohair upholstery effects. Full details, samples and prices upon inquiry.
COTTON
WOOL
RAYON
CLAREMONT WASTE MANUFACTURING CO.
The Country's Largest Manufacturers of Flock
CLAREMONT, NEW HAMPSHIRE

Standard Varnish Sales Convention

In mid-October the Standard Varnish Works held, in New York, an important convention of their industrial salesmen from both the New York and Chicago Plants. Pre-views of forthcoming products and their applications were displayed and the adaptation to civilian uses of improved finishes developed during the war were discussed. These products include "Polyplastic", a new synthetic for household and office appliances and other items requiring a durable protective finish.

New finishes have also been developed by Standard Varnish for the electrical field, especially for insulated wire, including hot melt, non-toxic, flame-resistant compounds and other specialties.

Standard Varnish salesmen include many graduate engineers who have had wide experience in conducting research in cooperation with customers to develop "custom made" formulations to meet specific requirements and adapted to changing conditions. M. H. Corbin, Vice President, in charge of sales, pointed out how new resins and other raw materials developed during the war were responsible for better wearing and simplified baking finishes now ready for post war products.

The convention was attended by all the industrial sales representatives and a number from the technical staff. The program included a dinner at the New York Advertising Club and culminated with a combined technical meeting of the members of the Chicago and New York laboratories.

Important Men Added to Arco's Technical Staff

Dr. Eugene W. Kanning, research director of The Arco Co., Cleveland, Ohio, paint manufacturers, has announced the appointment of J. J. McCormick as Manager of the Products Development Laboratory, and Dr. Edward G. Bobalek as Manager of the Resin Research Department.

Mr. McCormick is a chemical en-

SAN-ITAI-RIE
CRACK AND CREVICE FILLER
OLD FRIENDS ARE BEST!
Three generations of wood finishers have used SAN-ITAI-RIE FILLER. It still is best for all defects in wood.
SAN-ITAI-RIE FILLER CO.
DIVISION OF G. J. Liebich Co. CHICAGO 22 ILLINOIS

NALCO
Infra-Red Ray Lamps
Best for Infra-Red Ray Baking and Drying
Carbon Filament Lamps, service proven, available in Inside-Silvered (self-reflecting) or in Clear Glass types. Write for details
North American Elec. Lamp Co.
1030 Tyler St. St. Louis 4, Missouri

gineering graduate of Rose Polytechnic Institute and for 13 years was chief chemist for a color company in Detroit.

Dr. Bobelek holds degrees from St. Mary's College, Creighton University and Indiana University and was a research chemist with the Dow Chemical Co. until he joined the Arco technical staff.

Two other men recently appointed to Arco's technical staff in anticipation of the opening of its new research laboratory after the first of the year are Robert C. Krueger, research chemist in the Products Development Laboratory, and Edward G. Hart, research chemist on special problems in the Resin Research Department.

Mr. Krueger is a graduate of Case School of Applied Science and holds a master's degree in chemical engineering from the University of Louisville. A native Clevelander, he spent nine years with a paint company in Louisville, Ky., in testing and research work, and for the past year and a half has been with an appliance company, where he was engaged in research on electroplating methods.

Mr. Hart holds degrees from Michigan State College and Indiana University. For the past three years he has been engaged in special research on coatings and adhesives for the Dow Chemical Co.

Wm. M. Rand Elected President of Monsanto Chemical

William Rand was recently elected president of Monsanto Chemical Co., succeeding Charles Belknap, who will continue with the company as chairman of its Executive Committee.

In announcing Mr. Rand's election, Board Chairman Edgar M. Queeny said that Mr. Belknap agreed to extend his service beyond the normal retirement date as Executive Committee chairman and board member at the request of the Board of Directors.

William M. Rand, elected President of the Monsanto Chemical Co.

For the last eight years, Rand has been a Monsanto vice president and since November, 1943, when he became a member of the Executive Committee, has had his headquarters in St. Louis. He is 59 years old. He was formerly president of the Merrimac Chemical Co., Everett, Mass., acquired by Monsanto in 1929.

"Liquid honing" is a process of polishing metal. It is based upon the use of a fine abrasive in a chemical emulsion which is discharged by compressed air against the surfaces of metal to be polished.

Classified Advertising

Rate: 50 cents per line per insertion—minimum $1.50

FOREMAN FINISHER WANTED

By plant in eastern Penna. making furniture and radio cabinets. Excellent opportunity with future. Give age, marital status, experience, previous connections, salary expected to start and how soon can start. Address IF-248, care Industrial Finishing.

FINISHING FOREMAN

With proven experience in finishing wood cabinets wanted by radio cabinet company in New England. Good opportunity with definite future for the right man. Address IF-249, care Industrial Finishing.

OPPORTUNITY EXISTS

In industrial laboratory for man experienced in applications of paints, varnishes and lacquers for exhibition and evaluation work. Preferably, his experience should be completely rounded, covering all types of industrial finishes. Emphasis will be laid on experience in wood finishing. In reply, state experience and salary expected. Location: Suburban New York. Address IF-250, care Industrial Finishing.

FINISHING FOREMAN

Old established middle-west dinette manufacturer. Capable complete supervision large production operation. Give full details past eight years' employment. Address IF-255, care Industrial Finishing.

INDUSTRIAL AND TRADE SALESMEN

Wanted to represent a middle-west Paint and Coatings manufacturer for middle-west and eastern states. Must have following and experience. State full particulars in first letter. Commission basis only. Address IF-252, care Industrial Finishing.

WANTED — POLISHING AND PLATING FOREMAN

Experienced in brass and jewelry type items. Good opportunity with a nationally-known concern located in the New York metropolitan area. Write full details for interview. Data furnished will be treated as confidential. Address IF-247, Industrial Finishing.

INDUSTRIAL SALESMAN WANTED.

A Milwaukee manufacturer of high-grade enamel, lacquer, wood and metal furniture finishes, with some established volume, has an opening in Milwaukee and adjacent territory. Give full particulars of past experience, territory and age. Address IF-251, care Industrial Finishing.

SALESMANAGER—WOOD FINISHING.

We have an unusual opportunity for a person capable of assuming responsibility of this division, creating an outstanding sales organization and directing an aggressive campaign to make the WOOD FINISHING division an important segment of our business. A special technical group have worked for the past year developing a complete line of products which will be ready by January 1946. We are interested in receiving replies from qualified WOOD FINISHING salesmen or managers. A managerial background, while preferable, is not requisite. JONES-DABNEY CO., Louisville, Ky.

CHEMIST-FORMULATOR

Preferably familiar with current developments in lacquer and baking enamels for product finishing, needed to supplement present laboratory staff. Address reply stating education, experience and other qualifications to INDIANAPOLIS PAINT & COLOR COMPANY, Box 1259, Indianapolis 6, Indiana.

PAPER TRANSPARENTIZER

Technical man experienced in transparentizing paper. Ability to work with research chemists and design or assist in the design of equipment for transparentizing papers. Experience more important than age. Give complete information in first letter, including salary requirements. All answers held confidential. Address IF-253, care Industrial Finishing.

CHEMISTS WANTED

For Protective Coatings, Formulation and Control. An opportunity to become associated with outstanding Laboratory personnel. The positions open are permanent and offer many advantages — educational, financial and recognition of merit. Apply STANDARD VARNISH WORKS, 2600 Richmond Terrace, Staten Island, N. Y.

CHEMIST OR CHEMICAL ENGINEER

Age 25 to 30; some experience or educational background in lacquer formulation and testing. Good working conditions, excellent opportunity. Write personnel department, BRUNSWICK-BALKE-COLLENDER CO., Muskegon, Mich.

INDUSTRIAL FINISHES SALESMAN WANTED

Highly reputable Chicago paint and varnish manufacturer desires a young, energetic man for technical sales work in the Chicago and Middle West area. Must have successful background of product finish sales in this territory. This is really a splendid opportunity for a man who knows the product finish business and who wants unlimited present and future possibilities. Write us full details regarding yourself and your experience. Our salesmen know of this advertisement. Address IF-256, care Industrial Finishing.

VARNISH FORMULATOR

Wanted. Excellent opportunity for right man. Reply in complete detail. Address IF-242, care Industrial Finishing.

CHEMISTS WANTED.

Trained and experienced men wanted for Surface Coatings Group of the Technical Service and Development Division of the Stamford, Connecticut Laboratories of the American Cyanamid Company.

STAIN FORMULATOR.

Well-known established manufacturer wants man to take full charge of stain production. Exceptional opportunity. Permanent. All correspondence confidential. Our employees are informed as to this advertisement. Address IF-240, care Industrial Finishing.

AUTOMOTIVE LACQUER AND SYNTHETIC LINE WANTED.

We are specialists in Lacquers and Synthetics in Phila., and are anxious to secure a good automotive line of Lacquers and Synthetics. We want to be the sole distributor of a good line in Phila. PENNSYLVANIA LACQUER CENTER, 145-47 N. 4th St., Philadelphia 6, Pa. Write attention Harry Griver.

EQUIPMENT WANTED.

Two 160-gal. Porcelain, one 160-gal. Steel ball Pebble Mills; two 500-gal. open-head lacquer mixing tanks wanted by mid-western paint and lacquer company. State full details and prices in first letter. Address IF-254, care Industrial Finishing.

FOR SALE.

Paint—anxious to dispose of four (4) drums Jones-Dabney paint (unopened); one drum each of Pink Primer, Pink Enamel, Blue Primer and Blue Enamel. 500 to 700-ft. coverage per gallon. Will sacrifice. STANDARD SASH & DOOR CO., 5815 S. Racine Ave., Chicago 36, Ill. Phone Englewood 3865.

FORBES BAKING PRIMER

76-55-gal. drums Forbes Dark Grey Baking Primer @ 40c

In excellent condition. All or part.

RAND CHEMICAL PRODUCTS CO., 2335 So. Mich. Ave., Chicago 16, Phone CALumet 2566-67.

SELLING
THE FURNITURE TRADE?
Increase Your Earnings

You aim to serve your customers of course. Add a helpful financial service to your line, so you can arrange for your customer to finance his growing business, thus increasing your sales to him—our service is specifically designed for this purpose.

Get information on this new plan to increase your sales, and—also pay you a liberal commission.

Reply to IF-246, care Industrial Finishing, Indianapolis 4, Ind.

GET THIS BOOK

COLOR formulas and Useful Color Cards. Description, Properties, Theory, Harmony and Management of Colors. Furniture and Polychrome Finishing. Color and Light; Description of Color Pigments; Properties of Color Pigments; How Colors Are Prepared for the Trade; Basic Paint Pigments; Painting Oils; Volatile Thinners and Dryers; General Paint Mixing Methods; Color Theory, Principles and Use; Colored Paint Mixing, Methods; Mixing Special Purpose Materials; Color Harmony and Management; Selecting Color Schemes.

296 Pages, Fully Illustrated with Color Chart and Drawings, Cloth. Price..... **$2.00**

INDUSTRIAL FINISHING

1142 N. Meridian St. Indianapolis, Ind.

Now—MATCH THEIR BEST WITH YOUR MOST IN THE VICTORY LOAN!

Top off your good work on your Payroll Savings Plan with an outstanding showing in the Victory Loan—our last all-out effort!

Back the Victory Loan to help bring our boys back—and give our wounded heroes the best medical care. You know your quota! You also know by past war-loan experience that your personal effort and plant solicitation are required to make your quota!

Sell the New F. D. Roosevelt Memorial $200 Bond through your PAYROLL SAVINGS PLAN!

In rallies, interdepartmental contests, and solicitations, promote the new Franklin Delano Roosevelt Memorial $200 Bond! Better than "cash in hand," Victory Bonds enable buyers to build for the future!

Keep on giving YOUR MOST to the Victory Loan! All Bond payroll deductions during November and December will be credited to your quota. Every Victory Bond is a "Thank You" to our battle-weary men! Get behind the Victory Loan to promote peacetime prosperity for our returning veterans, your nation, your employees—and your own industry!

The Treasury Department acknowledges with appreciation the publication of this message by

INDUSTRIAL FINISHING

This is an official U. S. Treasury advertisement prepared under auspices of the Treasury Department and War Advertising Council

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